

**FINAL EXPRESS TERMS  
FOR  
PROPOSED BUILDING STANDARDS  
OF THE  
DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT  
REGARDING AMENDMENTS TO THE 2010 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)  
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11  
(HCD 01/10)**

---

The Department of Housing and Community Development (HCD) proposes to make necessary changes to the 2010 edition of the California Green Building Standards Code (CGBC), also known as CALGreen, as presented on the following pages:

---

**LEGEND FOR EXPRESS TERMS:**

1. **Existing California text or language being modified:** All such language shown in normal Arial 9 point; modified language is underlined or shown in ~~strikeout~~.
  2. **Repealed text:** All language appears in ~~strikeout~~.
  3. **Amended, adopted or repealed language after public hearing:** All such language shown in double underline or ~~double-strikeout~~.
  4. **Notation:** Authority and Reference citations are provided at the end of each section.
- 

**1. HCD proposes to amend Section 202 as follows:**

**SECTION 202  
DEFINITIONS**

ARB (CARB). The California Air Resources Board.

...

TIME DEPENDENT VALUATION (TDV) ENERGY. The time varying energy caused to be used by the building to provide space conditioning and water heating and for specified buildings lighting. TDV energy accounts for the energy used at the building site and consumed in producing and in delivering energy to a site, including, but not limited to, power generation, transmission and distribution losses.

...

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**2. HCD proposes to amend Section 304.1.1 as follows:**

**SECTION 304  
VOLUNTARY TIERS**

**304.1 Purpose.** Voluntary tiers are intended to further encourage building practices that improve public health, safety and general welfare by promoting the use of building concepts which minimize the building's impact on the environment and promote a more sustainable design.

**304.1.1 Tiers.** The provisions of Appendices Divisions A4.6 and A5.6 outline means, in the form of voluntary tiers, for ~~of~~ achieving enhanced construction levels by incorporating additional measures for residential and nonresidential new construction. Voluntary tiers may be adopted by local governments and, when adopted, enforced by local enforcing agencies. Buildings complying with tiers specified for each occupancy contain additional prerequisite and elective green building measures necessary to meet the threshold of each tier. See

Section 101.7 of this code for procedures and requirements related to local amendments, additions or deletions, including changes to energy standards.

[BSC] Where there are practical difficulties involved in complying with the threshold levels of a tier, the enforcing agency may grant modifications for individual cases. The enforcing agency shall first find that a special individual reason makes the strict letter of the tier impractical and that modification is in conformance with the intent and purpose of the measure. The details of any action granting modification shall be recorded and entered in the files of the enforcing agency.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **3. HCD proposes to amend Section 4.106.3 as follows:**

#### **SECTION 4.106 SITE DEVELOPMENT**

**4.106.3. Surface drainage Grading and paving.** ~~The site shall be planned and developed to keep surface water from entering buildings.~~ Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales.
- ...

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **4. HCD proposes to amend Section 4.303.1 as follows:**

#### **SECTION 4.303 INDOOR WATER USE**

**4.303.1 Twenty percent savings.** A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by at least 20 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 20 percent reduction in potable water use shall be demonstrated by one of the following methods:

1. **Prescriptive Method.** Each plumbing fixture and fitting shall ~~meet reduced flow rates~~ not exceed the Maximum Flow Rate at  $\geq$  20 Percent Reduction column specified in Table 4.303.2; or
2. **Performance Method.** A calculation demonstrating a 20 percent reduction in the building "water use" baseline as established in Table 4.303.1 shall be provided. For low-rise residential occupancies, the calculation shall be limited to the following plumbing fixture and fitting types: showerheads, lavatory faucets, water closets, and urinals, ~~lavatory faucets and showerheads.~~

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**5. HCD proposes to amend Section 4.303.2 as follows:**

**4.303.2 Multiple showerheads serving one shower.** When ~~single shower fixtures are a shower is~~ served by more than one showerhead, the combined flow rate of all the showerheads controlled by a single valve shall not exceed the ~~maximum flow rates at ≥ 20 Percent Reduction column specified in the 20 percent reduction column contained in~~ Table 4.303.2 or the shower shall be designed to only allow one showerhead to be in operation at a time.

**Exception:** The maximum flow rate for showerheads when using the ~~calculation~~ performance method specified in Section 4.303.1, Item 2, is 2.5 gpm @ 80 psi.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**6. HCD proposes to amend Table 4.303.1 as follows:**

**TABLE 4.303.1  
WATER USE BASELINE<sup>1</sup>**

<b>FIXTURE TYPE</b>	<b><u>BASELINE FLOW RATE</u><sup>2</sup></b>	<b>DURATION</b>	<b>DAILY USES</b>	<b>OCCUPANTS<sup>3,2</sup></b>
Showerheads, residential	2.5 gpm @ 80 psi	8 min.	1	
Lavatory faucets, residential	2.2 gpm @ 60 psi	.25 min.	3	
<u>Lavatory faucets, nonresidential</u>	<u>0.5 gpm @ 60 psi</u>	<u>.25 min.</u>	<u>3</u>	
Kitchen faucets	2.2 gpm @ 60 psi	4 min.	1	
Replacement aerators	2.2 gpm @ 60 psi			
Gravity tank-type water closets	1.6 gallons/flush	1 flush	1 male <sup>4,3</sup> 3 female	
Flushometer tank water closets	1.6 gallons/flush	1 flush	1 male <sup>4,3</sup> 3 female	
Flushometer valve water closets	1.6 gallons/flush	1 flush	1 male <sup>4,3</sup> 3 female	
Electromechanical hydraulic water closets	1.6 gallons/flush	1 flush	1 male <sup>4,3</sup> 3 female	
Urinals	1.0 gallons/flush	1 flush	2 male	

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

1. Use Worksheet WS-1 to calculate baseline water use.

~~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 2.~~ 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 3.~~ The daily use number shall be increased to three if urinals are not installed in the room.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**7. HCD proposes to amend Table 4.303.2 as follows:**

**TABLE 4.303.2  
FIXTURE FLOW RATES**

<b>FIXTURE TYPE</b>	<b><u>BASELINE</u> FLOW RATE</b>	<b>MAXIMUM FLOW RATE AT ≥ 20 PERCENT REDUCTION</b>
Showerheads	2.5 gpm @ 80 psi	2 gpm @ 80 psi
Lavatory faucets, residential	2.2 gpm @ 60 psi	1.5 gpm @ 60 psi <sup>2,1</sup>
<u>Lavatory faucets, nonresidential</u>	<u>0.5 gpm @ 60 psi</u>	<u>0.4 gpm @ 60 psi<sup>2</sup></u>
Kitchen faucets	2.2 gpm @ 60 psi	1.8 gpm @ 60 psi <sup>3</sup>
Gravity tank type water closets	1.6 gallons/flush	1.28 gallons/flush <sup>4,4</sup>
Flushometer tank water closets	1.6 gallons/flush	1.28 gallons/flush <sup>4,4</sup>
Flushometer valve water closets	1.6 gallons/flush	1.28 gallons/flush <sup>4,4</sup>
Electromechanical hydraulic water closets	1.6 gallons/flush	1.28 gallons/flush <sup>4,4</sup>
Urinals	1.0 gallons/flush	.5 gallons/flush

~~1. Includes single and dual flush water closets with an effective flush of 1.28 gallons or less.~~

~~Single flush toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume when tested in accordance with ASME A112.19.2/33.2.~~

~~Dual flush toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is defined as the composite, average flush volume of two reduced flushes and one full flush. Flush volumes will be tested in accordance with ASME A112.19.2 and ASME A112.19.14.~~

~~2.1. Lavatory faucets shall not have a flow rate less than 0.8 gpm at 20 psi.~~

~~3. 2. Where complying faucets are unavailable, aerators rated at .35 gpm or other means may be used to achieve reduction.~~

~~3. Kitchen faucets may temporarily increase flow above the maximum rate, but not above 2.2 gpm @ 60 psi and must default to a maximum flow rate of 1.8 gpm @ 60 psi.~~

~~4. Includes single and dual flush water closets with an effective flush of 1.28 gallons or less.~~

~~Single flush toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume when tested in accordance with ASME A112.19.2.~~

~~Dual flush toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is defined as the composite, average flush volume of two reduced flushes and one full flush. Flush volumes will be tested in accordance with ASME A112.19.2 and ASME A112.19.14.~~

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**8. HCD proposes to amend Table 4.303.3 as follows:**

**TABLE 4.303.3  
STANDARDS FOR PLUMBING FIXTURES AND FIXTURE FITTINGS**

<b>REQUIRED STANDARDS</b>	
Water closets (toilets) – flushometer valve type single flush, maximum flush volume	ASME A112.19.2/CSA B45.1 – 1.28 gal (4.8 L)
Water closets (toilets) – flushometer valve type dual flush, maximum flush volume	ASME A112.19.14 and <u>U.S. EPA WaterSense Tank-Type High Efficiency Toilet Specification</u> – 1.28 gal (4.8 L).
Water closets (toilets) – tank-type	<u>U.S. EPA WaterSense Tank-Type High-Efficiency Toilet Specification</u>
Urinals, maximum flush volume	ASME A112.19.2/CSA B45.1 – 0.5 gal (1.9 L)
Urinals, non-water urinals	ASME A112.19.19 (vitreous china) ANSI Z124.9–2004 or IAPMO Z124.9 (plastic)
Public lavatory faucets: Maximum flow rate – 0.5 gpm (1.9 L/min)	ASME A112.18.1/CSA B125.1
Public metering self-closing faucets: Maximum water use – 0.25 gal (1.0 L) per metering cycle	ASME A112.18.1/CSA B125.1
Residential bathroom lavatory sink faucets: Maximum flow rate – 1.5 gpm (5.7 L/min)	ASME A112.18.1/CSA B125.1
Showerheads: Maximum flow rate – 2.5 gal (9.5 L/min)	<u>ASME A112.18.1/CSA B125.1</u>

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**9. HCD proposes to amend Section 4.406.1 as follows:**

**SECTION 4.406  
ENHANCED DURABILITY AND REDUCED MAINTENANCE**

~~**4.406.1 Joints and openings Rodent proofing.** Openings in the building envelope separating conditioned space from unconditioned space needed to accommodate gas, plumbing, electrical lines and other necessary penetrations must be sealed in compliance with the *California Energy Code*.~~

**Exception:** Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**10. HCD proposes to amend Sections 4.408.1, 4.408.2 and 4.408.2.1, adopt Sections 4.408.3 and 4.408.4, and repeal Section 4.408.2.2 as follows:**

**SECTION 4.408  
CONSTRUCTION WASTE REDUCTION,  
DISPOSAL AND RECYCLING**

**~~4.408.1 Construction waste reduction of at least 50 percent management.~~** Recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction and demolition debris, waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance, whichever is more stringent.

**Exceptions:**

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.
3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.

**~~4.408.2 Construction waste management plan.~~** ~~Where a local jurisdiction does not have a construction and demolition waste management ordinance a construction waste management plan shall be submitted for approval to the enforcing agency that:~~ Submit a construction waste management plan in conformance with Items 1 through 5. The construction waste management plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency.

1. ~~Identifies~~ Identify the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale.
2. ~~Specifies~~ Specify if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream) for transportation to a diversion facility.
3. ~~Identifies the~~ Identify diversion facility facilities where the construction and demolition waste material collected will be taken.
4. ~~Identifies~~ Identify construction methods employed to reduce the amount of construction and demolition waste generated.
5. ~~Specifies~~ Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

**~~4.408.3 Waste management company.~~** Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1.

**Note:** The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.

**~~4.408.4 Waste stream reduction alternative.~~** Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed four (4) lbs./sq. ft. of the building area shall meet the minimum 50 percent construction waste reduction requirement in Section 4.408.1.

**~~4.408.2.15 Documentation.~~** Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, Items 1 through 5, Section 4.408.3 or Section 4.408.4. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

**Notes:**

1. Sample forms found in "A Guide to the California Green Building Standards Code (Low-Rise Residential)" located at [www.hcd.ca.gov/CALGreen.html](http://www.hcd.ca.gov/CALGreen.html) may be used to assist in documenting compliance with this section.
2. Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

~~4.408.2.2 Isolated jobsites.~~ The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.

**Notes:**

- ~~1. Sample forms found in Chapter 8 may be used to assist in documenting compliance with the waste management plan.~~
- ~~2. Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).~~

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## 11. HCD proposes to amend Section 4.502.1 as follows:

### SECTION 4.502 DEFINITIONS

**4.502.1 Definitions.** The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

...

~~**COMPOSITE WOOD PRODUCTS.** Composite wood products include hardwood plywood, particleboard and medium density fiberboard. Composite wood products do not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber as specified in "Structural Glued Laminated Timber" (ANSI A190.1 2002) or prefabricated wood I-joists.~~

**COMPOSITE WOOD PRODUCTS.** Composite wood products include hardwood plywood, particleboard, and medium density fiberboard. "Composite wood products" does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists, or finger-jointed lumber, all as specified in CCR, Title 17, Section 93120.1(a).

...

**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).

**Note:** Where specific regulations are cited from different agencies such as the South Coast Air Quality Management District (SCAQMD), California Air Resources Board (ARB or CARB), etc., the VOC definition included in that specific regulation is the one that prevails for the specific measure in question.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## 12. HCD proposes to amend Section 4.504.1 as follows:

### SECTION 4.504 POLLUTANT CONTROL

**4.504.1 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 ~~and~~ ventilating 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 water, dust ~~or~~ debris, which may ~~collect in~~ enter the system.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

### **13. HCD proposes to amend Section 4.504.3 as follows:**

**4.504.3 Carpet systems.** All carpet installed in the building interior shall meet the testing and product requirements of one of the following:

1. Carpet and Rug Institute's Green Label Plus Program.
2. California Department of Public Health, "Standard Practice for the testing of VOCs (Specification 01350) Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350.)
3. NSF/ANSI 140 at the Gold level.
4. Scientific Certifications Systems Indoor Advantage™ Gold.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **14. HCD proposes to amend Section 4.504.3.1 as follows:**

**4.504.3.1 Carpet cushion.** All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **15. HCD proposes to amend Section 4.504.4 as follows:**

**4.504.4 Resilient flooring systems.** Where resilient flooring is installed, at least 50 percent of floor area receiving resilient flooring shall comply with one or more of the following:

1. the VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List High Performance Products Database.
2. Products compliant with CHPS criteria certified under the Greenguard Children & Schools program.
3. or certified Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350.)

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **16. HCD proposes to amend Section 4.504.5.1 as follows:**

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

1. Product certifications and specifications.
2. Chain of custody certifications.
3. ~~Other methods acceptable to the enforcing agency.~~
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.

5. Other methods acceptable to the enforcing agency.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**17. HCD proposes to amend Section 4.505.2 as follows:**

**SECTION 4.505  
INTERIOR MOISURE CONTROL**

**4.505.2 Concrete slab foundations.** Concrete slab foundations required to have a vapor retarder by the California Building Code, CGR, Title 24, Part 2, Chapter 19 or concrete slab-on-ground floors required to have a vapor retarder by the California Residential Code, Chapter 5, shall also comply with this section.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**18. HCD proposes to amend Section 4.505.3 as follows:**

**4.505.3 Moisture content of building materials.** Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:

1. Moisture content shall be determined with either a probe-type or a contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece to be verified.
3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**19. HCD proposes to amend Section 4.506.1 as follows:**

**SECTION 4.506  
INDOOR AIR QUALITY AND EXHAUST**

**4.506.1 Bathroom exhaust fans.** ~~Mechanical exhaust fans which exhaust directly from bathrooms shall comply with the following:~~ Each bathroom shall be mechanically ventilated and shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a ~~humidistat~~ humidity control ~~which shall be readily accessible.~~

~~Humidistat controls shall be capable of adjustment between a relative humidity range of 50 to 80 percent.~~

- a. Humidity controls shall be capable of adjustment between a relative humidity range of ≤ 50 percent to a maximum of 80 percent. A humidity control may utilize manual or automatic means of adjustment.
- b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in).

**Notes:**

- 1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower, or tub/shower combination.
- 2. Lighting integral to bathroom exhaust fans shall comply with the *California Energy Code*.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**20. HCD proposes to amend Section 4.507.2 as follows:**

**SECTION 4.507  
ENVIRONMENTAL COMFORT**

**4.507.2 Heating and air-conditioning system design.** Heating and air-conditioning systems shall be sized, designed and have their equipment selected using the following methods:

- 1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J – 2004 (*Residential Load Calculation*), ASHRAE handbooks or other equivalent design software or methods.
- 2. Duct systems are sized according to ANSI/ACCA 1 ~~29-D~~ Manual D – 2009 (*Residential Duct Systems*), ASHRAE handbooks or other equivalent design software or methods.
- 3. Select heating and cooling equipment according to ANSI/ACCA 3 ~~36-S~~ Manual S – 2004 (*Residential Equipment Selection*) or other equivalent design software or methods.

**Exception:** Use of alternate design temperatures necessary to ensure the systems function are acceptable.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**21. HCD proposes to amend “ACCA” and “ANSI” in Chapter 6 as follows:**

Organization	Standard	Referenced Section
...		
<b>ACCA Air Conditioning Contractors of America</b>		
2800 Shirlington Road, Suite 300	<u>ANSI/ACCA 2 Manual J – 2004</u>	4.507.2
Arlington, VA 22206	<u>ANSI/ACCA 1 <del>29-D</del> Manual D – 2009</u>	4.507.2
www.acca.org	<u>ANSI/ACCA 3 <del>36-S</del> Manual S – 2004</u>	4.507.2
<b>ANSI American National Standards Institute</b>		
Operations Office	ANSI A190.1-2002	4.502.1
25 West 43rd Street, Fourth Floor	ANSI Z124.9-2004	Table 4.303.3
New York, NY 10036	NSF/ANSI 140-2007	
www.ansi.org	<u>ANSI/ACCA 2 Manual J – 2004</u>	<u>4.507.2</u>
	<u>ANSI/ACCA 1 Manual D – 2009</u>	<u>4.507.2</u>
	<u>ANSI/ACCA 3 Manual S – 2004</u>	<u>4.507.2</u>

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**22. HCD proposes to add explanatory text and amend Worksheet (WS-1) “BASELINE WATER USE” and Worksheet (WS-2) “20 PERCENT REDUCTION WATER USE” in Chapter 8 as follows:**

**CHAPTER 8  
COMPLIANCE FORMS AND WORKSHEETS**

**[HCD 1]** Sample forms found in “A Guide to the California Green Building Standards Code (Low-Rise Residential)” located at [www.hcd.ca.gov/CALGreen.html](http://www.hcd.ca.gov/CALGreen.html) may be used to assist in documenting compliance with the waste management plan.

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

BASELINE WATER USE CALCULATION TABLE									
FIXTURE TYPE	FLOW RATE (gpm) <sup>2</sup>		DURATION		DAILY USES		OCCUPANTS <sup>3,4,1,2</sup>		GALLONS PER DAY
Showerheads	2.5	X	5 min.	X	1	X		=	
Showerheads Residential	2.5	X	8 min.	X	1	X		=	
Lavatory Faucets Residential	2.2	X	.25 min.	X	3	X		=	
Lavatory Faucets Nonresidential	0.5	X	.25 min.	X	3			=	
Kitchen Faucets	2.2	X	4 min.	X	1	X		=	
Replacement Aerators	2.2	X		X		X		=	
Wash Fountains	2.2	X		X		X		=	
Metering Faucets	0.25	X	.25 min.	X	3	X		=	
Metering Faucets for Wash Fountains	2.2	X	.25 min.	X		X		=	
Gravity tank type Water Closets	1.6	X	1 flush	X	1 male <sup>4,3</sup> 3 female	X		=	
Flushometer Tank Water Closets	1.6	X	1 flush	X	1 male <sup>4,3</sup> 3 female	X		=	
Flushometer Valve Water Closets	1.6	X	1 flush	X	1 male <sup>4,3</sup> 3 female	X		=	
Electromechanical Hydraulic Water Closets	1.6	X	1 flush	X	1 male <sup>4,3</sup> 3 female	X		=	
Urinals	1.0	X	1 flush	X	2 male	X		=	
Total Daily baseline water use (BWU)								=	
_____ (BWU) X .80 = _____ Allowable water use									

- ~~1. 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~~ 1. 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~~ 2. For nonresidential occupancies, refer to Table A, Chapter 4, 2010 California Plumbing Code, for occupant load factors.
3. The daily use number shall be increased to three if urinals are not installed in the room.

**WORKSHEET (WS-2)  
20 PERCENT REDUCTION WATER USE**

20 PERCENT REDUCTION WATER USE CALCULATION TABLE								
FIXTURE TYPE	FLOW RATE (gpm) <sup>21</sup>		DURATION		DAILY USES		OCCUPANTS <sup>3,42,3</sup>	GALLONS PER DAY
Showerheads		X	5 min.	X	1	X		=
Showerheads Residential		X	8 min.	X	1	X		=
Lavatory Faucets Residential		X	.25 min.	X	3	X		=
Lavatory Faucets Nonresidential		X	.25 min.	X	3	X		=
Kitchen Faucets		X	4 min.	X	1	X		=
Replacement Aerators		X		X		X		=
Wash Fountains		X		X		X		=
Metering Faucets		X	.25 min.	X	3	X		=
Metering Faucets for Wash Fountains		X	.25 min.	X		X		=
Gravity tank type Water Closets		X	1 flush	X	1 male <sup>43</sup> 3 female	X		=
HET <sup>54</sup> High Efficiency Toilet	1.28	X	1 flush	X	1 male <sup>43</sup> 3 female	X		=
Flushometer Tank Water Closets		X	1 flush	X	1 male <sup>43</sup> 3 female	X		=
Flushometer Valve Water Closets		X	1 flush	X	1 male <sup>43</sup> 3 female	X		=
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male <sup>43</sup> 3 female	X		=
Urinals		X	1 flush	X	2 male	X		=
Urinals Non-Water Supplied	0.0	X	1 flush	X	2 male	X		=
Proposed water use								=
_____ (BWU from WS-1) X .80 = _____ Allowable water use								

1. ~~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. The flow rate values shall not exceed the baseline flow rates from the California Code of Regulations, Title 20, 2010 Appliance Efficiency Regulations.~~
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 nonresidential occupancies, refer to Table A, Chapter 4, 2010 California Plumbing Code, for occupant load factors.
5. Includes single and dual flush water closets with an effective flush of 1.28 gallons or less.  
 Single flush toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume when tested in accordance with ASME A112.19.233.2.  
 Dual flush toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is defined as the composite, average flush volume of two reduced flushes and one full flush. Flush volumes will be tested in accordance with ASME A112.19.2 and ASME A112.19.14.
5. ~~The daily use number shall be increased to three if urinals are not installed in the room.~~

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**23. HCD proposes to repeal “Construction Waste Management (CWM) Plan”, “Construction Waste Management (CWM) Worksheet”, and “Construction Waste Management (CWM) Acknowledgment” in Chapter 8 as follows:**

**Construction Waste Management (CWM) Plan**

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name: \_\_\_\_\_  
Job #: \_\_\_\_\_  
Project Manager: \_\_\_\_\_  
Waste Hauling Company: \_\_\_\_\_  
Contact Name: \_\_\_\_\_

All Subcontractors shall comply with the project's Construction Waste Management Plan.

All Subcontractor foremen shall sign the CWM Plan Acknowledgement Sheet.

Subcontractors who fail to comply with the Waste Management Plan will be subject to backcharges or withholding of payment, as deemed appropriate. For instance, Subcontractors who contaminate debris boxes that have been designated for a single material type will be subject to backcharge or withheld payment, as deemed appropriate.

1. The project's overall rate of waste diversion will be \_\_\_\_\_%.
2. This project shall generate the least amount of waste possible by planning and ordering carefully, following all proper storage and handling procedures to reduce broken and damaged materials and reusing materials whenever possible. The majority of the waste that is generated on this jobsite will be diverted from the landfill and recycled for other use.
3. Spreadsheet 1, enclosed, identifies the waste materials that will be generated on this project, the diversion strategy for each waste type and the anticipated diversion rate.
4. Waste prevention and recycling activities will be discussed at the beginning of weekly subcontractor meetings. As each new subcontractor comes on-site, the WMP Coordinator will present him/her with a copy of the CWM Plan and provide a tour of the jobsite to identify materials to be salvaged and the procedures for handling jobsite debris. Each Subcontractor foremen will acknowledge in writing that they have read and will abide by the CWM Plan. Subcontractor Acknowledgement Sheet enclosed. The CWM Plan will be posted at the jobsite trailer.
5. Salvage: Excess materials that cannot be used in the project, nor returned to the vendor, will be offered to site workers, the owner, or donated to charity if feasible.
6. [HAULING COMPANY] will provide a commingled drop box at the jobsite for most of the construction waste. These commingled drop boxes will be taken to [Sorting Facility Name and Location]. The average diversion rate for commingled waste will be \_\_\_\_\_%. As site conditions permit, additional drop boxes will be used for particular phases of construction (e.g., concrete and wood waste) to ensure the highest waste diversion rate possible.
7. In the event that the waste diversion rate achievable via the strategy described in (6) above, is projected to be lower than what is required, then a strategy of source separated waste diversion and/or waste stream reduction will be implemented. Source separated waste refers to jobsite waste that is not commingled but is instead allocated to a debris box designated for a single material type, such as clean wood or metal

**Notes:**

1. Waste stream reduction refers to efforts taken by the builder to reduce the amount of waste generated by the project to below four (4) pounds per square foot of building area.
2. When using waste stream reduction measures, the gross weight of the product is subtracted from a base weight of four (4) pounds per square foot of building area. This reduction is considered additional diversion and can be used in the waste reduction percentage calculations.
8. [HAULING COMPANY] will track and calculate the quantity (in tons) of all waste leaving the project and calculate the waste diversion rate for the project. [HAULING COMPANY] will provide Project Manager with an updated monthly report on gross weight hauled and the waste diversion rate being achieved on the project. [HAULING COMPANY's] monthly report will track separately the gross weights and diversion rates for commingled debris and for each source separated waste stream leaving the project. In the event that [HAULING COMPANY] does not service any or all of the debris boxes on the project, the [HAULING COMPANY] will work with the responsible parties to track the material type and weight (in tons) in such debris boxes in order to determine waste diversion rates for these materials.
9. In the event that Subcontractors furnish their own debris boxes as part of their scope of work, such Subcontractors shall not be excluded from complying with the CWM Plan and will provide [HAULING COMPANY] weight and waste diversion data for their debris boxes.
10. In the event that site use constraints (such as limited space) restrict the number of debris boxes that can be used for collection of designated waste the project Superintendent will, as deemed appropriate, allocate specific areas onsite where individual material types are to be consolidated. These collection points are not to be contaminated with non-designated waste types.
11. Debris from jobsite office and meeting rooms will be collected by [DISPOSAL SERVICE COMPANY]. [DISPOSAL SERVICE COMPANY] will, at a minimum, recycle office paper, plastic, metal and cardboard.

**CONSTRUCTION WASTE MANAGEMENT (CWM) WORKSHEET**

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

<b>Project Name:</b>	_____
<b>Job Number:</b>	_____
<b>Project Manager:</b>	_____
<b>Waste Hauling Company:</b>	_____

**Construction Waste Management (CWM) Plan**

Waste Material Type	Diversion Method:		Projected Diversion Rate
	Commingled and Sorted Off-site	Source Separated Onsite	
Asphalt			
Concrete			
Shotcrete			
Metals			
Wood			
Rigid Insulation			
Fiberglass Insulation			
Acoustic Ceiling Tile			
Gypsum Drywall			
Carpet/Carpet Pad			
Plastic Pipe			
Plastic Buckets			
Plastic			
Hardiplank Siding and Boards			
Glass			
Cardboard			
Pallets			
Job office trash, paper, glass & plastic bottles, cans, plastic			
Alkaline and rechargeable batteries, toner cartridges, and electronic devices			
Other:			
Other:			



## **24. HCD proposes to amend Section A4.106.5 of Appendix A4 as follows:**

### **SECTION A4.106 SITE DEVELOPMENT**

**A4.106.5 Cool roof.** Roofing materials for Tier 1 and Tier 2 buildings shall comply with this section:

**Exception:** ~~Install~~ Roof constructions that have a thermal mass over the roof membrane with a weight of at least 25 lb/sf.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## **25. HCD proposes to amend Section A4.106.5.3 of Appendix A4 as follows:**

**A4.106.5.3 Solar reflectance index alternative.** Solar Reflectance Index (SRI) equal to or greater than the values specified in Table A4.106.5(1) for Tier 1 and Table A4.106.5(2) for Tier 2 may be used as an alternative to compliance with the 3-year aged solar reflectance values and thermal emittance.

SRI values used to comply with this section shall be calculated using the Solar ~~Reflective~~ Reflectance Index (SRI) Calculation Worksheet (SRI-WS) developed by the California Energy Commission or in compliance with ASTM E1980-01 as specified in ~~Title 24, Part 6, the California Energy Code~~, Section 118(i)3. Solar reflectance values used in the SRI-WS shall be based on the 3-year aged reflectance value of the roofing product or the equation in Section A4.106.5.1 if the CRRC certified aged solar reflectance are not available. Certified ~~Thermal~~ emittance used in the SRI-WS may be either the initial value or the three year aged value listed by the CRRC.

Solar reflectance and thermal emittance may also be certified by other supervisory entities approved by the Commission pursuant to Title 24, Part 1, Section 10-113.

**Note:** The Solar ~~Reflective~~ Reflectance Index Calculation Worksheet (SRI-WS) is available by contacting the Energy Standards Hotline at 1-800-772-3300, website at [www.energy.ca.gov](http://www.energy.ca.gov) or by email at [Title24@energy.state.ca.us](mailto:Title24@energy.state.ca.us).

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## **25-A. HCD proposes to adopt Section A4.106.6 of Appendix A4 as follows:**

**A4.106.6. Electric vehicle (EV) charging.** Dwellings shall comply with the following requirements for the future installation of electric vehicle supply equipment (EVSE).

**A4.106.6.1 One-and two-family dwellings.** Install a listed raceway to accommodate a dedicated branch circuit. The raceway shall not be less than trade size 1. The raceway shall be securely fastened at the main service or subpanel and shall terminate in close proximity to the proposed location of the charging system into a listed cabinet, box or enclosure. Raceways are required to be continuous at enclosed or concealed areas and spaces. A raceway may terminate in an attic or other approved location when it can be demonstrated that the area is accessible and no removal of materials is necessary to complete the final installation.

**Exception:** Other pre-installation methods approved by the local enforcing agency that provide sufficient conductor sizing and service capacity to install Level 2 EVSE at its maximum operating ampacity.

**Note:** Utilities and local enforcing agencies may have additional requirements for metering and EVSE installation, and should be consulted during the project design and installation.

**A4.106.6.1.1 Labeling requirement.** A label stating "EV CAPABLE" shall be posted in a conspicuous place at the service panel or subpanel and next to the raceway termination point.

**A4.106.6.2 Multi-family dwellings.** At least 3 percent of the total parking spaces, but not less than one, shall be capable of supporting future electric vehicle supply equipment (EVSE).

**A4.106.6.2.1 Single charging space required.** When only a single charging space is required, install a listed raceway capable of accommodating a dedicated branch circuit. The raceway shall not be less than trade size 1. The raceway shall be securely fastened at the main service or subpanel and shall terminate in close proximity to the proposed location of the charging system into a listed cabinet, box or enclosure.

**Exception:** Other pre-installation methods approved by the local enforcing agency that provide sufficient conductor sizing and service capacity to install Level 2 EVSE at its maximum operating ampacity.

**A4.106.6.2.2. Multiple charging spaces required.** When multiple charging spaces are required, plans shall include the location(s) and type of the EVSE, raceway method(s), wiring schematics and electrical calculations to verify that the electrical system has sufficient capacity to simultaneously charge all the electrical vehicles at all designated EV charging spaces at their full rated amperage. Plan design shall be based upon Level 2 EVSE at its maximum operating ampacity. Only underground raceways and related underground equipment are required to be installed at the time of construction.

**Note:** Utilities and local enforcing agencies may have additional requirements for metering and EVSE installation, and should be consulted during the project design and installation.

**A4.106.6.2.3 Labeling requirement.** A label stating "EV CAPABLE" shall be posted in a conspicuous place at the service panel or subpanel and the EV charging space.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## **26. HCD proposes to amend Section A4.203 of Appendix A4 as follows:**

### **SECTION A4.203 PERFORMANCE APPROACH**

**A4.203.1 Energy performance.** Using an Alternative Calculation Method (ACM) approved by the California Energy Commission, calculate the annual Time Dependent Valuation (TDV) energy for each proposed building's energy and CO<sub>2</sub> emissions, and compare it to the TDV energy budget (standard or "budget" building) to achieve the following:

**Tier 1.** Exceed the 2010 California Energy Code based on the 2008 energy standards requirements by 15 percent.

**Tier 2.** Exceed the 2010 California Energy Code based on the 2008 energy standards requirements by 30 percent.

Field verify and document the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Reference Appendices.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## **27. HCD proposes to amend Section A4.211.1 of Appendix A4 as follows:**

### **SECTION A4.211 RENEWABLE ENERGY**

**A4.211.1 New solar homes partnership.** Install a solar photovoltaic (PV) system in compliance with the California Energy Commission New Solar Homes Partnership (NSHP).<sup>1,2,3</sup> Install energy efficiency measures meeting either Tier I or Tier II below.

**Tier I.** Exceed the 2010 California Energy Code requirements, based on the 2008 Energy Efficiency Standards by 15 percent.

**Tier II.** Exceed the 2010 California Energy Code requirements, ~~based on the 2008 Energy Efficiency Standards~~ by 30 percent.

Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.

1. In addition, for either Tier I or II, each appliance provided by the builder must be ENERGY STAR if an ENERGY STAR designation is applicable for that appliance.
2. Tier II requires a 30 percent reduction in the building's space cooling (air conditioning) energy compared to the 2010 California Energy Code.
- 2 3. Information on NSHP incentives available through the California Energy Commission may be obtained at the "Go Solar California" website.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## **28. HCD proposes to amend Section A4.211.2 of Appendix A4 as follows:**

**A4.211.2 Solar water heating system.** A Solar Rating and Certification Corporation (SRCC) OG 100 solar collector or OG 300 solar water heating system is installed. The SRCC Solar Energy Factor (SE) shall be used to determine the Solar Fraction (SF), which shall be at least 0.5 as determined using the California F-Chart available at the "gosolarcalifornia" website or through the California Energy Commission. The SF shall be at least 0.5.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

## **28-A. HCD proposes to amend Section A4.402 of Appendix A4 as follows:**

### **SECTION A4.402 DEFINITIONS (Reserved)**

**ASSEMBLY (ASSEMBLY PRODUCT).** An assembly (assembly product) includes or has been formulated using multiple materials.

**POST-CONSUMER CONTENT.** Any material which has been used by a consumer and then recycled for use in a new material or product.

**PRE-CONSUMER (OR POST-INDUSTRIAL) CONTENT.** Material diverted from the waste stream during one manufacturing process, including scraps, damaged goods, and excess production that is reclaimed and used in another manufacturing process. Excluded is reutilization of materials such as re-work, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated those wastes.

**PROPORTIONAL RECYCLED CONTENT (PRC<sub>M</sub>).** The amount of recycled content of a material in an assembly as related to the percentage of the material in an assembly product. PRC<sub>M</sub> is derived by multiplying the percentage of each material in an assembly by the percentage of recycled content in the material.

**RECYCLED CONTENT (RC).** The amount of recycled material in an assembly product or material. Refer to International Organization for Standardization ISO 14021 – Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling).

### **RECYCLED CONTENT VALUE (RCV).**

**Assembly products (RCV<sub>A</sub>).** Assembly product cost multiplied by the recycled content of the assembly based on all of the postconsumer content and 50 percent of the preconsumer content.

**Materials (RCV<sub>M</sub>).** Material cost multiplied by recycled content of the material based on all of the postconsumer content and 50 percent of the preconsumer content.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**29. HCD proposes to amend Section A4.404.3 of Appendix A4 as follows:**

**SECTION A4.404  
EFFICIENT FRAMING TECHNIQUES**

**A4.404.3 Building systems.** Use premanufactured building systems to eliminate solid sawn lumber whenever possible. One or more of the following premanufactured building systems is used:

1. Composite floor joist or premanufactured floor ~~truss~~ framing system
2. Composite roof rafters or premanufactured roof ~~truss~~ framing system
3. Panelized (SIPS, ICF or similar) ~~wall~~ framing systems
4. Other methods approved by the enforcing agency

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**29-A. HCD proposes to amend Sections A4.405.3, A4.405.3.1, and A4.405.4; and adopt Table A4. 405.3, Sections A4.405.3.1.1, A4.405.3.1.2, A4.405.3.1.3, A4.405.3.1.4 and A4.405.3.1.5 of Appendix A4 as follows:**

**SECTION A4.405  
MATERIAL SOURCES**

**A4.405.3 Recycled content.** Use materials, equivalent in performance to virgin materials, with postconsumer or preconsumer recycled content value (RCV) for a minimum of 10 percent of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.

**Tier 1.** Not less than a 10 percent recycled content value.

**Tier 2.** Not less than a 15 percent recycled content value.

**Note:** Sources and recycled content of some recycled materials can be obtained from CalRecycle.

**A4.405.3.1 Determination of recycled content value (RCV).** The following equation shall be used to calculate recycled content value.

$$RCV = (\text{percent PC} \times \text{material cost}) + 0.5 (\text{percent PI} \times \text{material cost})$$

**Notes:**

1. PC means post consumer waste
2. PI means post industrial waste

**A4.405.3 Recycled content.** Comply with the requirements for recycled content in Section A4.405.3.1.

**A4.405.3.1 Recycled content.** Use materials, equivalent in performance to virgin materials with a total (combined) recycled content value (RCV) of:

**Tier 1.** The RCV shall not be less than 10 percent of the total material cost of the project.  
Required Total RCV (dollars) = Total Material Cost (dollars) x 10 percent (Equation A4. 4-1)

**Tier 2.** The RCV shall not be less than 15 percent of the total material cost of the project.  
Required Total RCV (dollars) = Total Material Cost (dollars) x 15 percent (Equation A4. 4-2)

For the purposes of this section, materials used as components of the structural frame shall not be used to calculate recycled content. The structural frame includes the load bearing structural elements, such as wall studs, plates, sills, columns, beams, girders, joists, rafters, and trusses.

**Notes:**

1. Sample forms which allow user input and automatic calculation are located at [www.hcd.ca.gov/CALGreen.html](http://www.hcd.ca.gov/CALGreen.html) and may be used to simplify documenting compliance with this section and for calculating recycled content value of materials or assembly products.
2. Sources and recycled content of some recycled materials can be obtained from CalRecycle if not provided by the manufacturer.

**A4.405.3.1.1 Total material cost.** Total material cost is the total estimated or actual cost of materials and assembly products used in the project. The required total recycled content value for the project (in dollars) shall be determined by Equation A4.4-1 or Equation A4.4-2.

Total material cost shall be calculated by using one of the methods specified below:

**1. Simplified method.** To obtain the total cost of the project multiply the square footage of the residential structure by the square foot valuation established pursuant to Table A4.405.3 or as established by the enforcing agency. The total material cost is 45 percent of the total cost of the project. Use Equations A4.4-3A or A4.4-3B to determine total material costs using the simplified method.

Total material costs =

$$\text{Project square footage} \times \text{square foot valuation} \times 45 \text{ percent} \quad \text{(Equation A4.4-3A)}$$

$$\text{Total estimated or actual cost of project} \times 45 \text{ percent} \quad \text{(Equation A4.4-3B)}$$

**TABLE A4.405.3  
SQUARE FOOT VALUATION**

Type of Structure	Square Foot Construction Costs
Residential, one- and two-family	\$101.90
Residential, multiple family	\$92.94

Note: Minimum square foot construction costs for residential single-family; and multi-family dwellings are from the International Code Council's (ICC) *Building Valuation Data (BVD)*-- February 2011.

**2. Detailed method.** To obtain the total cost of the project, add the estimated and/or actual costs of materials used for the project, including the structure (steel, concrete, wood or masonry); the enclosure (roof, windows, doors and exterior walls); the interior walls, ceilings and finishes (gypsum board, ceiling tiles, etc.). The total estimated and/or actual costs shall not include fees, labor and installation costs, overhead, appliances, equipment, furniture or furnishings.

**A4.405.3.1.2 Determination of total recycled content value (RCV).** Total RCV may be determined either by dollars or percentage as noted below.

**1. Total recycled content value for the project (in dollars).** This is the sum of the recycled content value of the materials and/or assemblies considered and shall be determined by Equation A4.4-4. The result of this calculation may be directly compared to Equations A4.4-1 and A4.4-2 to determine compliance with Tier 1 or Tier 2 prerequisites.

$$\text{Total Recycled Content Value (dollars)} = (\text{RCV}_M + \text{RCV}_A) \quad \text{(Equation A4.4-4)}$$

**2. Total recycled content value for the project (by percentage).** This is expressed as a percentage of the total material cost and shall be determined by Equation A4.4-4 and Equation A4.4-5. The result of this calculation may be directly compared for compliance with Tier 1 (10 percent) or Tier 2 (15 percent) prerequisites.

$$\text{Total Recycled Content Value (percent)} = \frac{\text{Total Recycled Content Value (dollars)}}{\text{Total Material Cost (dollars)}} \times 100 \quad \text{(Equation A4.4-5)}$$

**A4.405.3.1.3 Determination of recycled content value of materials (RCV<sub>M</sub>).** The recycled content value of each material (RCV<sub>M</sub>) is calculated by multiplying the cost of material, as defined by the recycled content. See Equations A4.4-6 and A4.4-7.

$$RCV_M (\text{dollars}) = \text{Material cost (dollars)} \times RC_M (\text{percent}) \quad \text{(Equation A4.4-6)}$$

$$RC_M (\text{percent}) = \text{Post-consumer content percentage} + (\frac{1}{2}) \text{Pre-consumer content percentage} \quad \text{(Equation A4.4-7)}$$

**Notes:**

1. If the post-consumer and pre-consumer recycled content is provided in pounds, Equation A4.4-7 may be used, but the final result (in pounds) must be multiplied by 100 to show RC<sub>M</sub> as a percentage.

2. If the manufacturer reports total recycled content of a material as one percentage in lieu of separately reporting pre-consumer and post-consumer values, one-half of the total shall be considered pre-consumer recycled material and one-half of the total shall be considered post-consumer recycled material.

**A4.405.3.1.4. Determination of recycled content value of assemblies – (RCV<sub>A</sub>).**

Recycled content value of assemblies is calculated by multiplying the total cost of the assembly by the total recycled content of the assembly (RC<sub>A</sub>), and shall be determined by Equation A4.4-8.

$$RCV_A (\text{dollars}) = \text{Assembly cost (dollars)} \times \text{Total } RC_A (\text{percent}) \quad \text{(Equation A4.4-8)}$$

If not provided by the manufacturer, Total RC<sub>A</sub> (percent) is the sum (Σ) of the Proportional Recycled Content (PRC<sub>M</sub>) of each material in the assembly. RC<sub>A</sub> shall be determined by Equation A4.4-9.

$$RC_A = \sum PRC_M \quad \text{(Equation A4.4-9)}$$

PRC<sub>M</sub> of each material may be calculated by one of two methods using the following formulas:

**Method 1: Recycled content (Post-consumer and Pre-consumer) of each material provided in percentages**

$$PRC_M (\text{percent}) = \text{Weight of material (percent)} \times RC_M (\text{percent}) \quad \text{Equation A4.4-10}$$

$$\text{Weight of material (percent)} = \frac{\text{Weight of material (lbs)}}{[\text{Weight of material (lbs)} \div \text{Weight of assembly (lbs)}] \times 100} \quad \text{(Equation A4.4-11)}$$

$$RC_M (\text{percent}) = \text{Post-consumer content percentage} + (\frac{1}{2}) \text{Pre-consumer content percentage} \quad \text{(See Equation A4.4-7)}$$

**Method 2: Recycled content (Post-consumer and Pre-consumer) provided in pounds**

$$PRC_M (\text{percent}) = [RC_M (\text{lbs}) \div \text{Weight of material (lbs)}] \times 100 \quad \text{(Equation A4.4-12)}$$

$$RC_M (\text{lbs}) = \text{Post-consumer content (lbs)} + (\frac{1}{2}) \text{Pre-consumer content (lbs)} \quad \text{(Equation A4.4-13)}$$

**NOTE:** If the manufacturer reports total recycled content of a material as one percentage in lieu of separately reporting pre-consumer and post-consumer values, one-half of the total shall be considered pre-consumer recycled material and one-half of the total shall be considered post-consumer recycled material.

**A4.405.3.1.5. Alternate method for concrete.** When Supplementary Cementitious Materials (SCMs), such as fly ash or ground blast furnace slag cement, are used in concrete, an alternate method of calculating and reporting recycled content in concrete products shall be permitted. When determining the recycled content value, the percent recycled content shall be multiplied by the cost of the cementitious materials only, not the total cost of the concrete.

**A4.405.4 Use of building materials from rapidly renewable sources.** One or more of the following materials manufactured from rapidly renewable sources or agricultural by-products is used:

1. Insulation
2. Bamboo or cork
3. Engineered wood products
4. Agricultural based products
5. Solid wood products
6. Other products acceptable to the enforcing agency

**Note:** The intent of this section is to utilize building materials and products which are typically harvested within a 10-year or shorter cycle.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**30. HCD proposes to amend Section A4.408.1.1 of Appendix A4 as follows:**

**SECTION A4.408  
CONSTRUCTION WASTE DISPOSAL REDUCTION,  
DISPOSAL AND RECYCLING**

**A4.408.1.1 Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with this section. Documentation shall be in compliance with Section ~~4.408.2~~ 4.408.5.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**31. HCD proposes to amend Section A4.502 of Appendix A4 as follows:**

**SECTION A4.502  
DEFINITIONS**

**NO ADDED FORMALDEHYDE (NAF) BASED RESINS (NAF).** Resins formulated with no added formaldehyde as part of the resin cross linking structure for making hardwood plywood, particle board or medium density fiberboard. "No added formaldehyde based resins" include, but are not limited to, resins made from soy, polyvinyl acetate, or methylene diisocyanate.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

**32. HCD proposes to amend Section A4.504.2 of Appendix A4 as follows:**

**SECTION A4.504  
POLLUTANT CONTROL**

**A4.504.2 Resilient flooring systems.** Resilient flooring systems installed in the building shall meet the percentages specified in this section and comply with the VOC-emission limits defined in ~~the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program.~~ at least one of the following:

1. VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) High Performance Products Database.
2. Products compliant with CHPS criteria certified under the Greenguard Children & Schools program.

3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.

4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350.)

**Tier 1.** At least 80 percent of the total area of resilient flooring installed shall comply.

**Tier 2.** At least 90 percent of the total area of resilient flooring installed shall comply.

**Notes:**

1. ~~Information regarding CHPS Low-emitting Materials List High Performance may be found at [www.chpsregistry.com/live](http://www.chpsregistry.com/live) or <http://www.chps.net/dev/Drupal/node/381>.~~

2. ~~Information regarding RFCI-certified products may be found at [http://www.rfci.com/int\\_FSProdCert.htm](http://www.rfci.com/int_FSProdCert.htm).~~

3. Documentation must be provided that verifies that finish materials are certified to meet the pollutant emission limits in this section.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **33. HCD proposes to amend Section A4.504.3 of Appendix A4 as follows:**

**A4.504.3 Thermal insulation.** Thermal insulation installed in the building shall meet the following requirements:

**Tier 1.** Install thermal insulation in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) ~~Low-emitting Materials List~~ High Performance Products Database; products compliant with CHPS criteria certified under the Greenguard Children & Schools program; or meet California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350).

**Tier 2.** Install insulation which ~~contains No Added Formaldehyde (NAF) and is in compliance with the VOC-emission limits defined in Collaborative for High Performance Schools (CHPS) Low-emitting Materials List.~~ complies with Tier 1 plus does not contain any added formaldehyde.

**Note:** Documentation must be provided that verifies the materials are certified to meet the pollutant emission limits in this section.

**NOTE:** Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

---

---

### **34. HCD proposes to amend Section A4.601.4.2 of Appendix A4 as follows:**

#### **SECTION A4.601 GENERAL**

**A4.601.4.2 Prerequisite and elective measures for Tier 1.** In addition to the mandatory measures, compliance with the following prerequisite and elective measures from Appendix A4 is also required to achieve Tier 1 status:

1. From Division A4.1, Planning and Design.
  - 1.1 Comply with the topsoil protection requirements in Section A4.106.2.3.
  - 1.2 Comply with the 20 percent permeable paving requirements in Section A4.106.4.
  - 1.3 Comply with the cool roof requirements in Section A4.106.5.
  - 1.4 Comply with at least two elective measures selected from Division A4.1.

2. From Division A4.2, Energy Efficiency.
  - 2.1 Exceed the 2010 California Energy Code requirements, ~~based on the 2008 Energy Efficiency Standards~~ by 15 percent.
  - 2.2 Comply with at least four elective measures selected from Division A4.2.
3. From Division A4.3, Water Efficiency and Conservation.
  - 3.1 Comply with the reduced flow rate for kitchen sink faucets in Section A4.303.1.
  - ~~3.2 Comply with the Tier 1 potable water use reduction for landscape irrigation design in Section A4.304.4.~~
  - ~~3.3 Comply with at least one elective measure selected from Division A4.3.~~
  - 3.2 Comply with the landscape irrigation water budget requirement in Section A4.304.3.
  - 3.3 Comply with the Tier 1 potable water use reduction for landscape irrigation design in Section A4.304.4.
  - 3.4 Comply with at least one elective measure selected from Division A4.3.
4. From Division A4.4, Material Conservation and Resource Efficiency.
  - 4.1 Comply with the 20 percent cement reduction requirements in Section A4.403.2.
  - 4.2 Comply with the 10 percent recycled content requirements in Section A4.405.3.1.
  - 4.3 Comply with the 65 percent reduction in construction waste in Section A4.408.1.
  - 4.4 Comply with at least two elective measures selected from Division A4.4.
5. From Division A4.5, Environmental Quality.
  - 5.1 Comply with the 80 percent resilient flooring systems requirements in Section A4.504.2.
  - 5.2 Comply with the thermal insulation requirements for Tier 1 in Section A4.504.3.
  - 5.3 Comply with at least one elective measure selected from Division A4.5.

**Note:** The Residential Occupancies Application Checklist contained in Section A4.602 may be used to show which elective measures are selected.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

### **35. HCD proposes to amend Section A4.601.5.2 of Appendix A4 as follows:**

**A4.601.5.2 Prerequisite and elective measures for Tier 2.** In addition to the mandatory measures, compliance with the following prerequisite and elective measures from Appendix A4 is also required to achieve Tier 2 status.

1. From Division A4.1, Planning and Design.
  - 1.1 Comply with the topsoil protection requirements for Tier 1 and Tier 2 in Section A4.106.2.3.
  - 1.2 Comply with the 30 percent permeable paving requirements in Section A4.106.4.
  - 1.3 Comply with the cool roof requirements in Section A4.106.5.
  - 1.4 Comply with at least four elective measures selected from Division A4.1.
2. From Division A4.2, Energy Efficiency.
  - 2.1 Exceed the 2010 California Energy Code requirements, ~~based on the 2008 Energy Efficiency Standards~~ by 30 percent.
  - 2.2 Comply with at least six elective measures selected from Division A4.2.
3. From Division A4.3, Water Efficiency and Conservation.
  - 3.1 Comply with the Tier 1 reduced flow rate for kitchen sink faucets in Section A4.303.1.
  - 3.2 Comply with the Tier 2 dishwasher requirements in Section A4.303.1.
  - ~~3.3 Comply with the Tier 2 potable water use reduction for landscape irrigation design in Section A4.304.4.~~
  - ~~3.4 Comply with at least two elective measures selected from Division A4.3.~~
  - 3.3 Comply with the landscape irrigation water budget requirement in Section A4.304.3.
  - 3.4 Comply with the Tier 2 potable water use reduction for landscape irrigation design in Section A4.304.4.
  - 3.5 Comply with at least two elective measures selected from Division A4.3.
4. From Division A4.4, Material Conservation and Resource Efficiency.
  - 4.1 Comply with the 25 percent cement reduction requirements in Section A4.403.2.
  - 4.2 Comply with the 15 percent recycled content requirements in Section A4.405.3.1.
  - 4.3 Comply with the 75 percent reduction in construction waste in Section A4.408.1.
  - 4.4 Comply with at least four elective measures selected from Division A4.4.

5. From Division A4.5, Environmental Quality.

5.1 Comply with the 90 percent resilient flooring systems requirements in Section A4.504.2.

5.2 Comply with the thermal insulation requirements for Tier 1 and Tier 2 in Section A4.504.3.

5.3 Comply with at least one elective measure selected from Division A4.5.

**Note:** The Residential Occupancies Application Checklist contained in Section A4.602 may be used to show which elective measures are selected.

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.

**36. HCD proposes to amend Section A4.602 of Appendix A4 as follows:**

**SECTION A4.602  
RESIDENTIAL OCCUPANCIES APPLICATION CHECKLIST**

FEATURE OR MEASURE	LEVELS APPLICANT TO SELECT ELECTIVE MEASURES		VERIFICATIONS ENFORCING AGENCY TO SPECIFY VERIFICATION METHOD			
	Mandatory	Prerequisites and electives <sup>1</sup>		Enforcing Agency <input type="checkbox"/> All	Installer or Designer <input type="checkbox"/> All	Third party <input type="checkbox"/> All
		Tier 1	Tier 2			
<b>4.106.3</b> <del>The site shall be planned and developed to keep surface water away from buildings.</del> Construction plans shall indicate how site grading or a drainage system will manage all surface water flows <u>to keep water from entering buildings.</u>	<input checked="" type="checkbox"/>					
...						
<b>A4.106.6</b> <u>Electric vehicle charging. Provide capability for dedicated electrical vehicle supply equipment in single-family and multi-family structures.</u>		<input type="checkbox"/> —	<input type="checkbox"/> —			
<b>A4.211.1</b> Install a solar photovoltaic (PV) system in compliance with the California Energy Commission New Solar Homes Partnership (NSHP). <sup>1,2,3</sup> Install energy efficiency measures meeting either Tier I or Tier II below.  Tier 1. Exceed the <u>2010 California Energy Code</u> requirements, <del>based on the 2008 Energy Efficiency Standards requirements</del> by 15 percent.  Tier 2. Exceed the <u>2010 California Energy Code</u> requirements, <del>based on the 2008 Energy Efficiency Standards requirements</del> by 30 percent.  Solar water heating may be used to assist in meeting the energy efficiency requirements of either Tier I or Tier II.		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/> — <input checked="" type="checkbox"/> —	<input checked="" type="checkbox"/>  <input checked="" type="checkbox"/>

<p>1. In addition, for either Tier I or II, each appliance provided by the builder must be ENERGY STAR if an ENERGY STAR designation is applicable for that appliance.</p> <p>2. <u>Tier II requires a 30 percent reduction in the building's space cooling (air conditioning) energy compared to the 2010 California Energy Code.</u></p> <p>3. Information on NSHP incentives available through the California Energy Commission may be obtained at the "Go Solar California" website: <a href="http://www.GoSolarCalifornia.ca.gov/nshp/index.html">www.GoSolarCalifornia.ca.gov/nshp/index.html</a>.</p>						
...						
<p><b>4.303.2</b> When using the calculation method specified in Section 4.303.1, multiple showerheads <u>controlled by a single valve shall not exceed maximum flow rates.</u></p>	<input checked="" type="checkbox"/> 7/01/2011					
...						
<p><b>A4.304.3</b> A water budget shall be developed for landscape irrigation.</p>		<input checked="" type="checkbox"/> ² —	<input checked="" type="checkbox"/> ² —	<input type="checkbox"/>		
...						
<p><del><b>4.406.1 Joints and openings.</b> Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency.</del></p>	<input checked="" type="checkbox"/>					
...						
<p><del><b>4.408.1</b> A minimum of 50 percent of the construction waste generated at the site is diverted to recycle or salvage.</del></p>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>4.408.1</b> <u>Recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction and demolition waste in accordance with one of the following:</u></p> <p><u>1. Comply with a more stringent local construction and demolition waste management ordinance; or</u></p> <p><u>2. A construction waste management plan per Section 4.408.2; or</u></p> <p><u>3. A waste management company per Section 4.408.3; or</u></p> <p><u>4. The waste stream reduction alternative per Section 4.408.4.</u></p>	<input checked="" type="checkbox"/> —			<input type="checkbox"/> —	<input type="checkbox"/> —	<input type="checkbox"/> —

<p><b>4.408.2</b> Where a local jurisdiction does not have a construction and demolition waste management ordinance, a construction waste management plan shall be submitted for approval to the enforcing agency. ...</p>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p><b>4.504.4</b> 50 percent of floor area receiving resilient flooring shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) <del>Low-emitting Materials List</del> <u>High Performance Products Database</u> or be certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Dept. of Public Health, “<u>Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers</u>”, Version 1.1, February 2010 (also known as Specification 01350.) ...</p>	<input checked="" type="checkbox"/>					
<p>...</p>						
<p><b>4.507.2</b> Duct systems are sized, designed, and equipment is selected using the following methods:</p> <ol style="list-style-type: none"> <li>1. Establish heat loss and heat gain values according to <u>ANSI/ACCA 2 Manual J - 2004</u> or equivalent.</li> <li>2. Size duct systems according to <u>ANSI/ACCA 1 <del>29-D</del> (Manual D) - 2009</u> or equivalent.</li> <li>3. Select heating and cooling equipment according to <u>ANSI/ACCA 3 <del>36-S</del> (Manual S) - 2004</u> or equivalent.</li> </ol>	<input checked="" type="checkbox"/>					

**NOTE:** Authority cited: Health and Safety Code Sections 17921, 17922 and 19990. Reference: Health and Safety Code Health and Safety Code Sections 17000 through 17060, 17910 through 17990 and 19960 through 19997.