

**EXPRESS TERMS  
FOR  
PROPOSED BUILDING STANDARDS  
OF THE  
CALIFORNIA BUILDING STANDARDS COMMISSION (CBSC)**

**REGARDING ADOPTION OF AMENDMENTS TO THE 2010 CALIFORNIA BUILDING STANDARDS  
CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), PARTS 2, 3, 4, 5 and 6 in  
TITLE 24, CCR, PART 11, CALIFORNIA GREEN BUILDING STANDARDS CODE**

LEGEND FOR EXPRESS TERMS

1. New California language and modified language is underlined.
2. Repealed text: All such language appears in ~~strikeout~~.

The California Building Standards Commission (CBSC) proposes to amend the 2010 edition of the California Green Building Standards Code (CGBSC) as shown on the following pages. Adopt new text as follows:

**EXPRESS TERMS**

**CHAPTER 1**

**ADMINISTRATION**

**SECTION 101  
GENERAL**

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**101.3.1 State-regulated buildings, structures and applications.** Provisions of this code shall apply to the following buildings, structures, and applications regulated by state agencies as referenced in the Matrix Adoption Tables and as specified in Sections 103 through 106, except where modified by local ordinance pursuant to Section 101.7. When adopted by a state agency, the provisions of this code shall be enforced by the appropriate enforcing agency, but only to the extent of authority granted to such agency statute.

1. State-owned buildings, including buildings constructed by the Trustees of the California State University, and to the extent permitted by California laws, buildings designed and constructed by the Regents of the University of California and regulated by the Building Standards Commission. See Section 103 for additional scoping provisions.
2. Energy efficiency standards regulated by the California Energy Commission
3. Low-rise residential buildings constructed throughout the State of California, including but not limited to, hotels, motels, lodging houses, apartment houses, dwellings, dormitories, condominiums, shelters for homeless persons, congregate residences, employee housing, factory-built housing and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities. See Section 104 for additional scoping provisions.
4. Public elementary and secondary schools, and community college buildings regulated by the Division of the State Architect. See Section 105 for additional scope provisions.
5. Qualified historical buildings and structures and their associated sites regulated by the State Historical Building Safety Board within the Division of the State Architect.
6. General acute care hospitals, acute psychiatric hospitals, skilled nursing and/or intermediate care facilities, clinics licensed by the Department of Public Health and correctional treatment centers regulated by the Office of Statewide Health Planning and Development. See Section 106 for additional scoping provisions.
7. Graywater systems regulated by the Department of Water Resources and the Department of Housing and Community Development.
8. Green building standards for occupancies where no state agency has authority or expertise, adopted by the California Building Standards Commission. See Section 103 for additional scoping provisions.

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**SECTION 103  
BUILDING STANDARDS COMMISSION**

**103.1** Specific scope of application of the agency responsible for enforcement, the enforcement agency, and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.

**1. All occupancies.**

**Application** – New construction, unless otherwise indicated in this code, of State buildings (all occupancies),

including buildings constructed by the Trustees of the California State University and the Regents of the University of California and all occupancies where no state agency has the authority to adopt building standards applicable to such buildings.

**Enforcing Agency** – State or local agency specified by the applicable provisions of law.

**Authority Cited** – Health and Safety Code Sections ~~18930.5~~, 18934.5 and ~~18938 (b)~~.

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

**2. Application** – All occupancies where no state agency has the authority to adopt green building standards applicable to those occupancies.

**Enforcing Agency** – State or local agency specified by the applicable provisions of law.

**Authority Cited** – Health and Safety Code Sections 18930.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

### **2. 3. University of California, California State Universities, and California Community Colleges.**

**Application** – Standards for lighting for parking lots and primary campus walkways at the University of California, California State Universities, and California Community Colleges.

**Enforcing Agency** – State or local agency specified by the applicable provisions of law.

**Authority Cited** – Government Code Section 14617.

**Reference** – Government Code Section 14617.

### **3 4. Existing State-Owned Buildings, including those owned by the University of California and by the California State University.**

**Application** – Building seismic retrofit standards including abating falling hazards of structural and nonstructural components and strengthening of building structures. See also Division of the State Architect.

**Enforcing Agency** – State or local agency specified by the applicable provisions of law.

**Authority Cited** – Government Code Section 16600.

**Reference** – Government Code Sections 16600 through 16604.

### **4 5. Unreinforced Masonry Bearing Wall Buildings.**

**Application** – Minimum seismic strengthening standards for buildings specified in Appendix Chapter 1 of the California Code for Building Conservation, except for buildings subject to building standards adopted pursuant to Part 1.5 (commencing with Section 17910).

**Enforcing Agency** – State or local agency specified by the applicable provisions of law.

**Authority Cited** – Health and Safety Code Section 18934.6.

**Reference** – Health and Safety Code Sections 18901 through 18949.

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

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## **CHAPTER 2**

### **SECTION 202 DEFINITIONS**

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**ARB (CARB).** The California Air Resources Board.

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**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 cost 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.

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Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

## **CHAPTER 3**

### **GREEN BUILDING**

#### **SECTION 301 GENERAL**

## SECTION 304

### VOLUNTARY TIERS

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**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 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 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.

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Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

## CHAPTER 5

### NONRESIDENTIAL MANDATORY MEASURES

#### DIVISION 5.1 PLANNING AND DESIGN

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#### SECTION 5.102 DEFINITIONS

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~~**PZEV.** Any vehicle certified by the California Air Resources Board as a Partial Credit Zero Emission Vehicle.~~

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#### SECTION 5.106 SITE DEVELOPMENT

~~**5.106.1 Storm water soil loss prevention plan.** For newly constructed projects of less than one acre, develop a Storm Water soil loss Pprevention plan that has been designed, specific to its site, conforming to the State Storm water NPDES Construction Permit 99-08 DWQ or local ordinance, whichever is stricter, as is required for projects one acre or more. The plan should cover prevention of soil loss by storm water run-off and/or wind erosion, of sedimentation, and/or of dust/particulate matter air pollution.~~

**5.106.1 Storm water pollution prevention.** Newly constructed projects which disturb less than one acre of land shall prevent the pollution of stormwater runoff from the construction activities through one or more of the following measures:

**5.106.1.1 Local ordinance.** Comply with a lawfully enacted stormwater management and/or erosion control ordinance.

~~**Note:** No state permit is required, but construction best management practices (BMPs) shall be followed. BMPs include but are not limited to the following:~~

**5.106.1.2. Best management practices (BMP).** Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMP.

1. Erosion and sediment control BMPs Soil loss BMP that should be considered for implementation as appropriate for each project include, but are not limited to, the following:

- a. Scheduling construction activity
- b. Preservation of natural features, vegetation and soil
- c. Drainage swales or lined ditches to control stormwater flow
- d. Mulching or hydroseeding to stabilize disturbed soils

- e. Erosion control to protect slopes
- f. Protection of storm drain inlets (gravel bags or catch basin inserts)
- g. Perimeter sediment control (perimeter silt fence, fiber rolls)
- h. Sediment trap or sediment basin to retain sediment on site
- i. Stabilized construction exits
- j. Wind erosion control

2. Housekeeping BMPs Good housekeeping BMP to manage construction equipment, materials, and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following:

- a. Material handling and waste management
- b. Building materials stockpile management
- c. Management of washout areas (concrete, paints, stucco, etc.)
- d. Control of vehicle/equipment fueling to contractor's staging area
- e. Vehicle and equipment cleaning performed off site
- f. Spill prevention and control

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**5.106.4 Bicycle parking.** Comply with Sections 5.106.4.1 and 5.106.4.2; or meet local ordinance ~~or the University of California Policy on Sustainable Practices~~, whichever is stricter.

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**5.106.5.2 Designated parking.** . . .

**5.106.5.2.1 Parking stall marking.** Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle:

**“CLEAN AIR VANPOOL/ELECTRIC/  
VEHICLE HOV LANE STICKER”**

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**5.106.8 Light pollution reduction.** Comply with the following:

1. ~~L~~ lighting power requirements in the California Energy Code, ~~CCR, Title 24, Part 6, and design interior and exterior lighting such that zero direct beam illumination leaves the building site~~ and lighting zones 1-4 and lighting zone characteristics as defined in Chapter 10 of the California Administrative Code, CCR, Title 24, Part 1 and

2. Control interior and exterior lighting to minimize direct-beam illumination leaving the building site, using the following strategies as follows:

1 ~~a. Shield all exterior luminaires or~~ Provide cutoff luminaires per Section 132 (b) of the California Energy Code or shield all exterior luminaires to control uplight equivalent to cutoff luminaires.

2 ~~b. Contain interior lighting within each source structure.~~

3 ~~c. Allow no more than .01 horizontal footcandles to escape 15 feet beyond the site boundary~~ Design site lighting layout and fixtures to allow no more than 0.2 vertical and horizontal footcandles at the site boundary.

4 ~~d. Automatically control~~ Provide exterior lighting controls that can be programmed dusk to dawn to turn off or lower light levels during inactive periods from sunset to sunrise

or

3. Meet lawfully enacted local dark sky ordinance, whichever is more restrictive.

**Exceptions:**

1. California Building Code, Part 2, Chapter 12, Section 1205.6 for campus lighting requirements for parking facilities and walkways.

2. Emergency lighting and lighting required for nighttime security.

3. Lighting which falls into task or process categories which include, but are not limited to the following:

a. Temporary outdoor lighting.

b. Lighting required and regulated by the Federal Aviation Administration, and the Coast Guard

c. Lighting for public streets, roadways, highways, and traffic signage lighting, including for driveway entrances occurring in the public right-of-way.

d. Lighting for sports and athletic fields, and children's playgrounds.

e. Lighting for industrial sites, including but not limited to, rail yards, maritime shipyards and docks, piers, marinas, chemical and petroleum processing plants, and aviation facilities.

f. Lighting specifically for Automated teller machine as required by California Financial Code Section 13040, or required by law through a local ordinance.

g. Lighting of public monuments.

h. Signs shall meet the requirements of T 24, Part 6 Section 148

i. Lighting used in or around swimming pools, water features or other locations subject to Article 680 of the California Electrical Code

j. Lighting of bridges, stairs, wheelchair elevator lifts for American with Disabilities Act (ADA) compliance, and ramps that are other than parking garage ramps.

k. Landscape lighting

l. In theme parks: outdoor lighting for themes and special effects.

m. Lighting for outdoor theatrical and other outdoor live performances, provided that these lighting systems are additions to area lighting systems and are controlled by a multiscene or theatrical cross-fade control station accessible only to authorized operators.

n. Outdoor lighting systems for qualified historic buildings, as defined in the California Historic Building Code (Title 24, Part 8), if they consist solely of historic lighting components or replicas of historic lighting components. If lighting systems for qualified historic buildings contain some historic lighting components or replicas of historic components, only those historic or historic replica components are exempt. All other outdoor lighting systems for qualified historic buildings shall comply with this Section.

o. Flags

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**5.106.10 Grading and Paving.** ~~The site shall be planned and developed to keep surface water from entering buildings.~~ Construction plans shall indicate how site grading or a 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
2. Water collection and disposal systems
3. French drains
4. Water retention gardens
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

## CHAPTER 5

### NONRESIDENTIAL MANDATORY MEASURES

#### SECTION 5.303 INDOOR WATER USE

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**5.303.1 Meters.** Separate submeters or metering devices shall be installed for the uses described in Sections 5.303.1.1 and 5.303.1.2.

**5.303.1.1 Buildings in excess of 50,000 square feet (4645 m<sup>2</sup>).** Separate submeters shall be installed as follows:

1. For each individual leased, rented, or other tenant space within the building projected to consume more than 100 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.
2. ~~For spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop projected to consume more than 100 gal/day~~ Where separate submeters for individual building tenants are unfeasible, for the following subsystems:
  - a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s)
  - b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s)
  - c. Steam and hot-water boilers with energy input more than 500,000 Btu/h (147 kW)

**5.303.1.2 Excess consumption.** Any building ~~within a project~~ or a space within a building that is projected to consume more than 1,000 gal/day (3800 L/day).

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**5.303.2 20% Savings.** A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 20% shall be provided. The reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code. The 20% reduction in potable water use shall be demonstrated by one of the following methods.

1. Prescriptive method. Each plumbing fixture and fitting shall ~~meet the 20% reduced flow rate~~ not exceed the maximum flow rate at ≥20 percent reduction as specified in Table 5.303.2.3, or
2. Performance method. A calculation demonstrating a 20% reduction in the building “water use baseline” as established in Table 5.303.2.2 shall be provided.

**5.303.2.1 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 rate at ≥20 percent reduction contained in Table 5.303.2.2 or the shower shall be designed to only allow one showerhead to be in operation at a time.

**Exception:** The maximum flow rate for shower heads when using the calculation performance method specified in Section 5.303.2.1, Item 2 is 2.5 gpm @ 80 psi.

**TABLE 5.303.2.2  
INDOOR WATER USE BASELINE <sup>4 3</sup>**

Fixture Type	Baseline Flow-rate <sup>2</sup>	Duration	Daily uses	Occupants <sup>2, 3, 4 3</sup>
Showerheads	2.5 gpm @ 80 psi	8 min.	1	X
Lavatory faucets, residential	2.2 gpm @ 60 psi	.25 min.	3	X
Lavatory Faucets Nonresidential	0.5 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 <sup>1</sup> 3 female	X
Flushometer Tank Water Closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 3 female	X
Flushometer Valve Water Closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 3 female	X
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 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

<sup>1</sup> The daily use number shall be increased to three if urinals are not installed in the room.

<sup>2</sup> 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.

<sup>3 2</sup> Refer to Table A, Chapter 4, California Plumbing Code, for occupant load factors.

<sup>4 3</sup> Use Worksheet WS-1 to calculate base line water use.

**TABLE 5.303.2.3 FIXTURE FLOW RATES**

Fixture Type	Baseline Flow-rate	Maximum flow rate at $\geq 20\%$ Reduction
Showerheads	2.5 gpm @ 80 psi	2 gpm @ 80 psi
Lavatory faucets, residential	2.2 gpm @ 60 psi	1.5 gpm @ 60 psi <sup>1</sup>
Lavatory Faucets Nonresidential	0.5 gpm @ 60 psi	0.4 gpm @ 60 psi <sup>3</sup>
Kitchen Faucets	2.2 gpm @ 60 psi	1.8 gpm @ 60 psi <sup>2</sup>
Wash Fountains	2.2 [rim space (in.) / 20 gpm @ 60 psi]	1.8 [rim space (in.) / 20 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]	.20 [rim space (in.) / 20 gpm @ 60 psi]
Gravity tank type Water Closets	1.6 gallons/flush	1.28 gallons/flush <sup>1</sup>
Flushometer Tank Water Closets	1.6 gallons/flush	1.28 gallons/flush <sup>1</sup>
Flushometer Valve Water Closets	1.6 gallons/flush	1.28 gallons/flush <sup>1</sup>
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1.28 gallons/flush <sup>1</sup>
Urinals	1.0 gallons/flush	.5 gallons/flush

<sup>1</sup> Lavatory Faucets Residential shall not have a flow rate less than 0.8 gpm at 20 psi.

<sup>2</sup> 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.

<sup>3</sup> Where complying faucets are unavailable, aerators rated at .35 gpm or other means may be used to achieve reduction.

<sup>-4</sup>Includes single and dual flush water closets with an effective flush of 1.28 gallons or.  
 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.

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**TABLE 5.303.6  
 STANDARDS FOR PLUMBING FIXTURES AND FIXTURE FITTINGS**

REQUIRED STANDARDS	
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Residential bathroom lavatory sink faucets: Maximum flow rate – 1.5 gpm (5.7 l/min) <sup>1</sup>	ASME A112.18.1/CSA B125.1
<u>Showerheads: Maximum flow rate – 2.5 gal (9.5 l/min)</u>	<u>ASME A112.18.1/CSA B125.1</u>

**SECTION 5.304  
 OUTDOOR WATER USE**

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**5.304.2 Outdoor potable water use.** For new water service for landscaped areas ~~between~~ of at least 1000 square feet ~~and but not more than~~ 5000 square feet (the level at which Water Code §535 applies), separate ~~meters or~~ submeters or metering devices shall be installed for ~~indoor and~~ outdoor potable water use.

**5.304.3 Irrigation design.** In new nonresidential construction with ~~between~~ at least 1000 square feet ~~and but not more than~~ 2500 square feet of landscaped area (the level at which the MLO applies), install irrigation controllers and sensors which include the following criteria, and meet manufacturer's recommendations.

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Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

**CHAPTER 5**

**NONRESIDENTIAL MANDATORY MEASURES**

**DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**

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**SECTION 5.408  
 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING**

**5.408.1 Construction waste diversion.** ~~Establish a construction waste management plan for the diverted materials, or meet local construction and demolition waste management ordinance, whichever is more stringent.~~

**5.408.2 1 Construction waste management plan.** Recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.

**5.408.1.1 Construction waste management plan.** Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan ~~for approval by the enforcement agency~~ that:

1. Identifies the construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale.
2. Determines if construction waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
3. Identifies approved diversion facilities where construction waste material collected will be taken.
4. Specifies that the amount of construction waste materials diverted shall be calculated by weight or volume, but not by both.

**5.408.1.2 Waste management company.** Utilize a waste management company, approved by the enforcing agency, that can provide verifiable documentation that the percentage of construction waste material diverted from the landfill complies with this section.

**Note:** The owner or contractor shall make the determination if the construction waste material will be diverted by a waste management company.

**Exceptions to 5.408.1.1 and 5.408.1.2:**

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.
3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets, where demolition of an existing structure(s) is necessary for the construction of a new structure.

**5.408.1.3 Waste stream reduction alternative.** The combined weight of new construction disposal that does not exceed 2 lbs/s.f. of building area may be deemed to meet the 50% minimum requirement as approved by the enforcing agency.

**5.408.2.1.4 Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 5.408.2.1.1, ~~Items thru 4~~ through 5.408.1.3. 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 (Nonresidential)" located at <http://www.bsc.ca.gov/CALGreen/default.htm> 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).

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**5.408.2.2 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).~~

~~**5.408.3 Construction waste reduction of at least 50%.** Recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction and demolition debris, or meet a local construction and demolition waste management ordinance, whichever is more stringent. Calculate the amount of materials diverted by weight or volume, but not by both.~~

**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.~~

**5.408.4.3 Excavated soil and land clearing debris.** 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

**Exception:** Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.

**Notes:**

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material. ([www.cdffa.ca.gov/exec/county/county\\_contacts.html](http://www.cdffa.ca.gov/exec/county/county_contacts.html))
2. For a map of known pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture ([www.cdffa.ca.gov](http://www.cdffa.ca.gov))

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**5.410.2 Commissioning.** For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner's representative's project requirements. . . .

**5.410.2.2 Basis of Design (BOD).** A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project, ~~and updated as necessary during the design and construction phases.~~ The Basis of Design document shall cover the following systems:

1. Heating, ventilation, air conditioning (HVAC) systems and controls
2. Indoor lighting system and controls
3. Water heating system
4. Renewable energy systems
5. Landscape irrigation systems
6. Water reuse systems

**5.410.2.3 Commissioning plan.** Prior to permit issuance a commissioning plan shall be completed to document how the project will be commissioned ~~and shall be started during the design phase of the building project.~~ The Commissioning Plan shall include the following:

1. General project information
2. Commissioning goals
3. Systems to be commissioned. Plans to test systems and components shall include:
  - a. An explanation of the original design intent
  - b. Equipment and systems to be tested, including the extent of tests
  - c. Functions to be tested
  - d. Conditions under which the test shall be performed
  - e. Measurable criteria for acceptable performance
4. Commissioning team information
5. Commissioning process activities, schedules and responsibilities. Plans for the completion of commissioning requirements listed in A5.410.4.4 through A5.410.4.6 shall be included

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**5.410.2.5.1 Systems manual.** Documentation of the operational aspects of the building shall be completed within the Systems Manual and delivered to the building owner or representative ~~and facilities operator.~~ The Systems Manual shall include the following:

1. Site information, including facility description, history and current requirements
2. Site contact information
3. Basic operations and maintenance, including general site operating procedures, basic troubleshooting, recommended maintenance requirements, site events log
4. Major systems
5. Site equipment inventory and maintenance notes
6. A copy of all ~~special inspection~~ verifications required by the enforcing agency or this code
7. Other resources and documentation if applicable

**5.410.2.5.2 Systems operations training.** ~~The~~ A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report and shall include the following:

1. System/equipment overview (what it is, what it does and with what other systems and/or equipment it interfaces)
2. Review and demonstration of servicing/preventive maintenance
3. Review of the information in the Systems Manual
4. Review of the record drawings on the system/equipment

**5.410.2.6 Commissioning report.** ~~A complete~~ report of commissioning process activities undertaken through the design, ~~and construction and reporting recommendations for post construction~~ phases of the building project shall be completed and provided to the owner or representative.

**5.410.4 Testing and adjusting.** Testing and adjusting of systems shall be required for buildings less than 10,000 square feet.

#### **5.410.4.1 Reserved**

**5.410.4.2 Systems.** Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include ~~at a minimum,~~ as applicable to the project:

1. HVAC systems and controls
2. Indoor and outdoor lighting and controls
3. Water heating systems
4. Renewable energy systems
5. Landscape irrigation systems
6. Water reuse systems

**5.410.4.3 Procedures.** Perform testing and adjusting procedures in accordance with ~~industry best practices and applicable national~~ standards on each system as determined by the ~~building official~~ enforcing agency.

**5.410.4.3.1 HVAC balancing.** In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, balance the system ~~shall be balanced~~ in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural Standards; ~~or~~ Associated Air Balance Council National Standards or as approved by the ~~building official~~ enforcing agency.

...

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

## CHAPTER 5

### NONRESIDENTIAL MANDATORY MEASURES

#### DIVISION 5.5 ENVIRONMENTAL QUALITY

##### SECTION 5.502 DEFINITIONS

...

**A-WEIGHTED SOUND LEVEL (dBA).** The sound pressure level in decibels as measured on a sound level meter using the internationally standardized A-weighting filter or as computed from sound spectral data to which A-weighting adjustments have been made.

...

**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).

...

**DECIBEL (dB).** A measure on a logarithmic scale of the magnitude of a particular quantity (such as sound pressure, sound power, sound intensity) with respect to a reference quantity.

**ENERGY EQUIVALENT (NOISE) LEVEL (L<sub>eq</sub>).** The level of a steady noise which would have the same energy as the fluctuating noise level integrated over the time period of interest.

**EXPRESSWAY.** An arterial highway for through traffic which may have partial control of access, but which may or may not be divided or have grade separations at intersections.

**FREEWAY.** A divided arterial highway with full control of access and with grade separations at intersections.

...

**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 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.

##### SECTION 5.504 POLLUTANT CONTROL

**5.504.1.3 Temporary ventilation.** The permanent HVAC system shall only be used during construction if necessary to condition the building within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992. Replace all filters immediately prior to occupancy.

...

**5.504.3 Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation, ~~or~~ and 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 dust ~~or~~ , water and debris which may ~~collect in~~ enter the system.

...

**5.504.4.4 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 or higher
4. Scientific Certifications Systems Sustainable Choice

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

...

**5.504.4.5 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 ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 5.504.4.5. . . .

**5.504.4.5.1 Early compliance. Reserved.**

**5.504.4.5.2 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.

...

**5.504.4.6 Resilient flooring systems.** For 50% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its ~~Low emitting Materials List (or Product Registry)~~ High Performance Products Database; products compliant with CHPS criteria certified under the Greenguard Children & Schools program; or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 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.) . . .

**5.504.5.3 Filters.** In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air ~~prior to occupancy~~ that provides at least a Minimum Efficiency Reporting Value (MERV) of 8. MERV 8 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

**Exception:** A MERV-1 filter shall be allowed for return air only or return with prefiltered outside air, if the filter is of a re-usable, non-disposable type, and the fan energy use of that air delivery system is 0.4W/cfm or less at design airflow.

...

**5.504.7 Environmental tobacco smoke (ETS) control.** Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and ~~in buildings within the building, if not already prohibited by other laws or regulations,~~ or as enforced by ordinances, regulations, or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations, or policies are not in place, post signage to inform building occupants of the prohibitions.

## SECTION 5.506 INDOOR AIR QUALITY

**5.506.1 Outside air delivery.** For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 (Requirements For Ventilation) of the 2010 California Energy Code, CCR, Title 24, Part 6, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

**5.506.2 Carbon dioxide (CO<sub>2</sub>) monitoring. [BSC]** For buildings equipped with demand control ventilation, CO<sub>2</sub> sensors and ventilation controls shall be specified and installed in accordance with the requirements of the ~~current edition of the~~ 2010 California Energy Code, CCR, Title 24, Part 6, Section 121(c).

## SECTION 5.507 ENVIRONMENTAL COMFORT

**5.507.4 Acoustical control.** Employ building assemblies and components with Sound Transmission ~~Coefficient Class~~ (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332.

**5.507.4.1 Exterior noise transmission, performance method.** Wall and roof-ceiling assemblies making up the building envelope shall ~~have an STC of at least 50, and exterior windows shall have a minimum STC of 30~~ be constructed to provide an interior noise environment that does not exceed an hourly equivalent noise level (L<sub>eq</sub>

1Hr) of 50 dBA in occupied areas for any of the following building locations:

1. Within 1000 ft. (300 m.) of right of ways of expressways or freeways.
2. Within 5 mi. (8 km.) of airports serving more than 10,000 commercial jets per year.
3. Within 2,000 ft. (600 m) of active railroad tracks
4. ~~Where sound levels at the property line regularly exceed 65 decibels,~~ Other than occasional sound due to church bells, train horns, emergency vehicles and public warning systems, where exterior sound levels exceed one of the following during occupied hours:-
  - a. An  $L_{eq}$ -1Hr of 65 dBA
  - b. A 65 day night noise level (DNL/ $L_{dn}$ )
  - c. A 65 community noise exposure level (CNEL)

**5.507.4.2 Exterior noise transmission, prescriptive method.** Exterior wall and roof-ceiling assemblies shall comply with either 5.407.4.1.1 or 5.407.4.1.2 as applicable.

**5.407.4.2.1 Exposure to airport, road, or railroad noise.** Buildings exposed to airport, road, or railroad noise shall have exterior wall and roof-ceiling assemblies meeting a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport
2. Within the 65 CNEL or  $L_{dn}$  noise contour of a road as determined by the Noise Element of the General Plan
3. Within 1000 ft. of the horn-sounding zone of active railroad tracks

**5.407.4.2.2 Noise exposure in other areas.** Buildings exposed to noise exceeding sound levels in Section 5.407.4.1, Item 4 shall have exterior wall and roof-ceiling assemblies meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

**Exception:** Buildings with few or no occupants and where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures, and utility buildings.

**5.507.4.3 Interior sound transmission.** Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

**Note:** Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: [http://www.toolbase.org/PDF/CaseStudies/stc\\_icc\\_ratings.pdf](http://www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf).

...

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

*[New Division 5.7 for Additions and Alterations is submitted under separate cover without underline for clarity.]*

## CHAPTER 6

### REFERENCED ORGANIZATIONS AND STANDARDS

#### SECTION 601 GENERAL

**601.1** This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard.

<u>Organization</u>	<u>Standard</u>	<u>Referenced Section</u>
...		
...	...	...
<b>ASTM</b> ASTM International		
100 Barr Harbor Drive West Conshohocken, PA 19428-2859 <a href="http://www.astm.org">www.astm.org</a>	C 33 <u>C 150</u> <u>C 595</u> C 618 <u>C 989</u> C 1157 <u>C 1240</u> C1371-98	A5.405.5.3.2 <u>A5.405.5.1</u> <u>A5.405.5.1</u> A5.405.5.2.1 <u>A5.405.5.2.1</u> <u>A5.405.5.1</u> A5.405.5.2.1 A4.205.1,

	C 1549 C 1602 C 1697 E 90  E 408-71(2002)  E 413 E 1332 E 1333-96 (2002)  E 1903-97 E-1918 E 1980-01	A5.106.11.2. 2 A5.106.11.1 A5.405.5.3.2.3 A5.405.5.2.1 5.507.5.4 A4.205.1, A5.102.6.11.2.2 5.507.5.4 5.507.4 Table 4.504.5 & 5.504.4.5 A5.103.4 A5.106.11.1 A4.106.5.3, A5.106.11.2.3
...		
...	...	...

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

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### CHAPTER 8 COMPLIANCE FORMS AND WORKSHEETS

...

[BSC] Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located at <http://www.bsc.ca.gov/CALGreen/default.htm> may be used to assist in documenting compliance with the waste management plan and other provisions of this code.

...

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

BASELINE WATER USE CALCULATION TABLE							
FIXTURE TYPE	FLOW RATE <sup>2</sup> (gpm)		DURATION		DAILY USES	OCCUPANTS <sup>3,4,1,2</sup>	GALLONS PER DAY
Showerheads	2.5	X	5 min.	X	1	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. 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.

42. 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 CALCULATION TABLE**

FIXTURE TYPE	FLOW-RATE (gpm) <sup>2,1</sup>		DURATION		DAILY USES		OCCUPANTS <sup>3,4,2,3</sup>		GALLONS PER DAY
Showerheads		X	5 min.	X	1	X		=	
...									
Gravity tank type Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X		=	
HET <sup>54</sup> High Efficiency Toilet	1.28	X	1 flush	X	1 male <sup>45</sup> 3 female	X		=	
Flushometer Tank Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X		=	
Flushometer Valve Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X		=	
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	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 2010 California Code of Regulations, Title 20, Appliance Efficiency Regulations (See Table 4.303.2.)~~

32. 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.

43. For nonresidential occupancies, refer to Table A, Chapter 4, 2010 California Plumbing Code, for occupant load factors.

54. 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.

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

**WORKSHEET (WS-3)  
30-35 OR 40 PERCENT REDUCTION WATER USE CALCULATION TABLE**

FIXTURE TYPE	FLOW-RATE (gpm) <sup>2,1</sup>		DURATION		DAILY USES		OCCUPANTS <sup>3,4,2,3</sup>		GALLONS PER DAY
Showerheads		X	5 min.	X	1	X		=	
...									
Gravity tank type Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X			
HET <sup>54</sup> High Efficiency Toilet	1.28	X	1 flush	X	1 male <sup>45</sup> 3 female	X			
Flushometer Tank Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X			
Flushometer Valve Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X			
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male <sup>45</sup> 3 female	X			
...									
Proposed water use								=	
30% Reduction _____ (BWU from WS-1) X .70 = _____ Allowable water use									
35% Reduction _____ (BWU from WS-1) X .65 = _____ Allowable water use									
40% Reduction _____ (BWU from WS-1) X .60 = _____ 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 2010 California Code of Regulations, Title 20, Appliance Efficiency Regulations (See Table 4.303.2.)~~
32. 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.
43. For nonresidential occupancies, refer to Table A, Chapter 4, 2010 California Plumbing Code, for occupant load factors.
54. 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.
45. ~~The daily use number shall be increased to three if urinals are not installed in the room.~~

## 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 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.
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 the waste diversion rate being achieved on the project. [HAULING COMPANY's] monthly report will track separately the 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] 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/Parpet 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:			



**APPENDIX A5  
NONRESIDENTIAL VOLUNTARY MEASURES**

...

**DIVISION A5.1 SITE PLANNING AND DESIGN**

...

**SECTION A5.102  
DEFINITIONS**

**A5.102.1 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.

**ALBEDO.** Synonymous with solar reflectance, which is a ratio of the energy reflected back into the atmosphere to the energy absorbed by the surface, with 100% being total reflectance.

...

~~**PZEV.** Any vehicle certified by the California Air Resources Board as a Partial Credit Zero Emission Vehicle.~~

...

**SOLAR REFLECTANCE.** A measure of the fraction of solar energy that is reflected by a surface (measured on a scale of 0 to 1).

**SOLAR REFLECTANCE INDEX (SRI).** A measure of a material surface's ability to reflect solar heat, as shown by a small temperature rise. It includes both solar reflectance and thermal emittance and is quantified such that a standard black surface (solar reflectance 0.05, thermal emittance 0.90) is 0 and a standard white surface (solar reflectance 0.80, thermal emittance 0.90) is 100.

**THERMAL EMITTANCE.** The relative ability of a surface to radiate absorbed heat (measured on a scale of 0 to 1).

...

**VEGETATED SPACE.** Vegetated spaces include, but are not limited to, native, undisturbed areas; rehabilitation of previously disturbed areas with landscaping; green belts; and recreation facilities that include landscaping, such as golf courses.

...

**SECTION A5.104  
SITE PRESERVATION**

...

**A5.104.2 Bird-safe building design.** Employ design strategies to avoid migratory bird collisions with buildings planned for sites with the following characteristics:

1. Open space greater than two acres (0.81 Ha) where vegetation is planned to be preserved or planted adjacent to the building
2. Adjacency to permanently designated parkland or vegetated space greater than two acres (0.81 Ha) in size

**Note:** The occurrence of migratory birds on a project site should be determined by a biological site survey acceptable to the enforcing authority or by contacting a local office of the US Fish and Wildlife Service or the California Department of Fish and Game.

**A5.104.2.1 Glazing.** On facades exposed to vegetated open space, avoid see-through glazing and reflective glazing to a height of 40 feet (12 meters) or to the height of adjacent trees, whichever is higher.

**A5.104.2.1.1 Alternate glazing strategies.** If used on exposed facades, glazing shall meet envelope requirements in the California Energy Code, Title 24, Part 6 and can include, but is not limited to, the following:

1. Etched or fritted glass of a density recommended in bird-safe guidelines (See note below)
2. Laminated glass with a patterned UV-reflective coating visible to birds or use of UV-absorbing and UV-reflecting films on glass that are visible to birds
3. Glass façade design to create "visual noise" which distorts reflections or reduces transparency, such as readily discernable contrasting material, texture, color, opacity, glass grids or faceting
4. Glass sloped outward at an angle between 20° and 40° from vertical for at least the first story of exposed facades

**A5.104.2.1.2 Exterior features.** Provide exterior features that allow birds to distinguish glass from sky, vegetation, or water that may include, but not be limited to:

1. Shading devices adjacent to untreated glass that meet Section A5.106.7, such as
  - a. Grilles, louvers, screens or nettings with openings no more than 4 inches (10 centimeters) vertically, horizontally or in both directions
  - b. Awnings, overhangs, sunshades or light shelves
  - c. Landscaping planted within three feet of the building's exterior

2. Interior blinds, shades or curtains visible from the exterior, included as part of the construction contract
3. Water features such as bird baths, pools, fountains and retention ponds isolated from untreated glazed facades by soil berms, furniture or architectural features
4. Vegetated roofs meeting Section A5.106.3 shielded from adjacent structures by vertical elements treated to a height of 1 unit per 4 units of perpendicular length of green roof
5. Building facades, canopies, and railings, where located adjacent to vegetated roofs, treated to a height of 1 unit per 4 units of perpendicular length of green roof

**A5.104.2.2 Nighttime conditions.** Provide lighting time-switch control devices or occupancy sensors, meeting the California Energy Code, Part 6, Title 24, and Section 5.106.8, that can be programmed to turn off interior and exterior lights between no later than 11 PM and sunrise.

**Exception:** Emergency lighting and lighting required for nighttime security.

**A5.104.2.2.1 Systems or operation and maintenance manual.** Include written recommendations that lighting is extinguished pursuant to Section A5.104.2.2 and janitorial services to the building are scheduled between sunrise and sunset.

**Note:** More information on bird-safe building design strategies can be obtained from the Birds and Buildings Forum and the American Bird Conservancy.

...

**A5.106.4 Bicycle parking and changing rooms.** Comply with Sections A5.106.4.1 through A5.106.4.3; or meet local ordinance or the University of California Policy on Sustainable Practices, whichever is stricter.

**A5.106.4.1 Short-term bicycle parking. [DSA-SS]** If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks . . .

**A5.106.4.2 Long-term bicycle parking. [DSA-SS]** For buildings with over 10 tenant-occupants, provide secure bicycle parking . . .

**A5.106.5.1 Designated parking for fuel efficient vehicles.** Provide designated parking for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles as shown in Table A5.106.5.1.1 or A5.106.5.1.2.

**A5.106.5.1.1. Tier 1 [BSC] 10% of total spaces [DSA-SS]** Provide 10% of total designated parking spaces for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles as follows:

**Table A5.106.5.1.1  
Tier 1  
10% of Total Spaces [DSA-SS]**

Total Number of Parking Spaces	Number of Required Spaces
0-9	0
...	...
201 and over	At least 10% of total

**A5.106.5.1.2. Tier 2** Provide 12% of total designated parking spaces for any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles as follows:

**Table A5.106.5.1.2  
Tier 2 [BSC]  
12% of Total Spaces**

Total Number of Parking Spaces	Number of Required Spaces
0-9	1
...	...
201 and over	At least 12% of total

**A5.106.5.1.3 Parking stall marking.** Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle:

**“CLEAN AIR VANPOOL/ELECTRIC/  
VEHICLE HOV LANE STICKER”**

**A5.106.5.1.4 Vehicle designations.** Building managers may consult with local community Transit Management Associations (TMAs) for methods of designating qualifying vehicles, such as issuing parking stickers. . . .

**A5.106.7 Exterior wall shading.** Meet requirements in the current edition of the California Energy Code and select one of the following comply with either Section A5.106.7.1 or A5.106.7.2 for wall surfaces: . . . If using vegetative shade,

plant species documented to reach desired coverage within 5 years of building occupancy.

4. **A5.106.7.1 Fenestration.** Provide vegetative or man-made shading devices for all fenestration on east-, south-, and west-facing walls ~~with windows.~~

**A5.106.7.1.1 East and west walls.** Shading devices shall have ~~with~~ 30% coverage to a height of 20 feet or to ~~the top of the exterior wall, whichever is less, for east and west walls.~~ Calculate shade coverage on the summer solstice at 10 AM for east-facing walls and at 3 PM for west-facing walls. ~~Plant vegetative shade of species documented to reach desired coverage within 5 years of building occupancy.~~

**A5.106.7.1.2 South walls.** Shading devices shall have 60% coverage to a height of 20 feet or to the top of the exterior wall, whichever is less.

2. **A5.106.7.2 Opaque wall areas.** Use wall surfacing with minimum SRI 25 (aged), for 75% of opaque wall areas.

**Exception:** Use of vegetated shade in Wildland-Urban Interface Areas as defined in Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure) of the California Building Code shall meet the requirements of that chapter.

**Note:** If not available from the manufacturer, aged SRI value calculations may be found at the California Energy Commission's web site at [www.energy.ca.gov](http://www.energy.ca.gov).

**A5.106.9 Building orientation.** Locate and orient the building as follows:

1. When site and location permit, orient the building with the long sides facing within 30° of north and south.
2. Protect the building from thermal loss, drafts, and degradation of the building envelope caused by wind and wind-driven materials such as dust, sand, snow, and leaves with building orientation and landscape features.

**Note:** For information on sun angles and shading, visit: <http://www2.aud.ucla.edu/energy-design-tools/>. Calculations may be made using the Solar-2 tool.

**A5.106.11 Heat island effect.** Reduce non-roof heat islands by Section A5.106.11.1 and roof heat islands by A5.106.11.2.

**A5.106.11.1 Hardscape alternatives.** Use one or a combination of strategies 1 through 3 for 50% of site hardscape or put 50% of parking underground.

1. Provide shade (mature within 5 years of occupancy).
2. Use light colored/ ~~high albedo~~ reflective materials with an initial solar reflectance value of at least .30 as determined in accordance with American Society for Testing and Materials (ASTM) Standards E1918 or C1549.
3. Use open-grid pavement system or pervious or permeable pavement system.

**A5.106.11.2 Cool roof.** Use roofing materials having a minimum 3-year aged solar reflectance and thermal emittance complying with A5.106.11.2.1 and A5.106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) ~~complying with A5.106.11.2.3 and as shown in Table A5.106.11.2.1 for Tier 1 or A5.106.11.2.2 for Tier 2.~~

...

**A5.106.11.2.2 Thermal emittance.** Roofing materials shall have a CRRC initial or 3-year aged thermal emittance as determined in accordance with ASTM E 408 or C 1371 equal to or greater than those specified in Table A5.106.11.2.1 for Tier 1 and Table A5.106.11.2.2 for Tier 2.

**A5.106.11.2.3 Solar reflectance index alternative.** Solar Reflectance Index (SRI) equal to or greater than the values specified in Table A5.106.11.2.1 for Tier 1 and Table A5.106.11.2.2 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 A5.106.11.2.1 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.

**Note:** The Solar ~~Reflective~~ Reflectance Index Calculation Worksheet (SRI-WS) is available by contacting the Energy Standard 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).

**Table A5.106.11.2.1 [BSC]  
Tier 1**

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged Solar Reflectance	Thermal Emittance	SRI
≤ 2 :	N.A	13 & 2-15	0.55	0.75	64

12					
> 2 :	< 5 lbs./ft <sup>2</sup>	40 2-16	0.20	0.75	16
12	≥ 5 lbs./ft <sup>2</sup>	1-16	0.15	0.75	10

**Table A5.106.11.2.2  
Tier 2**

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged Solar Reflectance	Thermal Emittance	SRI
≤ 2 : 12	N/A	2, 4, 6 -15	0.65	0.85	78
> 2 : 12	N/A < 5 lbs./ft <sup>2</sup>	2, 4, 6 -15 2- 16	0.23	0.85	20 23
	≥ 5 lbs./ft <sup>2</sup>	1-16	0.30	0.85	30

...

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b)

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

## APPENDIX A5

### NONRESIDENTIAL VOLUNTARY MEASURES

#### DIVISION A5.2 ENERGY EFFICIENCY

...

#### SECTION A5.202 DEFINITIONS

##### A5.202.1 Definitions. . . .

~~**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 cost 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.~~

~~[This definition is being moved to Chapter 2]~~

...

#### SECTION A5.203 PERFORMANCE APPROACH

~~**A5.203.1 Energy performance.** For the purposes of energy efficiency standards in this code the California Energy Commission will continue to adopt mandatory building standards. It is the intent of this code to encourage green buildings to achieve exemplary performance in the area of energy efficiency. Specifically, a green building should achieve more than a 15% reduction in energy usage when compared to the State's mandatory energy efficiency standards. Using an Alternative Calculation Method approved by the California Energy Commission, calculate each nonresidential building's annual TDV regulated energy use components and CO<sub>2</sub> emissions, and compare it them to the standard or "budget" building.~~

~~**Exception:** The "percent better than" calculation omits Process and Receptacle energy use components in comparing the Standard and Proposed energy use.~~

~~**A5.203.1.1 Tier 1 [BSC] Energy efficiency – 15% above Title 24, Part 6 the California Energy Code. [DSA-SS]** Exceed the 2010 California Energy Code requirements, based on the 2008 Energy Efficiency Standards by 15% percent and meet the requirements of Division A5.6.~~

~~**A5.203.1.2 Tier 2 [BSC] Energy efficiency – 30% above Title 24, Part 6 the California Energy Code. [DSA-SS]** Exceed the 2010 California Energy Code requirements, based on the 2008 Energy Efficiency Standards by 30% percent and meet the requirements of Division A5.6.~~

~~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.~~

...

**A5.204.4 Commissioning. [OSHPD 1 & 4]** Building commissioning shall be included in the design and construction processes of the building project . . .

**SECTION A5.205 [OSHPD 1 & 4]  
BUILDING ENVELOPE**

...

**SECTION A5.207 [OSHPD 1, 2 & 4]  
HVAC DESIGN, EQUIPMENT AND INSTALLATION**

...

**A5.209 [OSHPD 1, 2 & 4]  
LIGHTING**

...

**SECTION A5.210 [OSHPD 1, 2 & 4]  
APPLIANCES**

...

**SECTION A5.211  
RENEWABLE ENERGY**

...

**A5.211.4 Pre-wiring for future rooftop solar.** ~~Install~~ Size and install conduit from the building roof or eave to a location within the building identified as suitable for future installation of controls and/or storage batteries a charge controller (regulator) and inverter.

**A5.211.4.1 Grid-connected system without storage.** Location within the building shall be of sufficient dimensions to accommodate an inverter and/or other controls as approved by the utility.

**A5.211.4.2 Off grid pre-wiring for future solar System for future energy storage.** If battery storage is anticipated, ~~conduit should run to a location within the building that is shall:~~

1. Be stable, weather-proof, insulated against very hot and very cold weather, and isolated from occupied spaces
2. Be able to accommodate batteries, ventilation complying with the California Fire Code, an inverter with or without a charge controller (regulator) and, if grid-connected, other controls as approved by the utility.

**SECTION A5.212  
ELEVATORS, ESCALATORS AND OTHER EQUIPMENT**

**A5.212.1 Elevators and escalators.** In buildings with more than one elevator or two escalators, provide systems and controls to reduce the energy demand of elevators for part of the day and escalators as follows. to reduce speed when no traffic is detected. Document the systems operation and controls in the project specifications and commissioning plan.

**A5.212.1.1 Elevators.** Traction elevators shall have a regenerative drive system that feeds electrical power back into the building grid when the elevator is in motion.

**A5.212.1.1.1 Car lights and fan.** A parked elevator shall turn off its car lights and fan automatically until the elevator is called for use.

**A5.212.1.2 Escalators.** An escalator shall have a VVVF motor drive system that is fully regenerative when the escalator is in motion.

**A5.212.1.3 Stairs as an alternative [DSA-SS].** In Public School and Community College buildings, locate stairs conveniently to encourage their use in lieu of elevators or escalators.

**A5.212.1.4 Controls.** Controls that reduce energy demand shall meet requirements of CCR, Title 8, Chapter 4, Subchapter 6 and shall not interrupt emergency operations for elevators required in CCR, Title 24, Part 2, California Building Code.

...

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

**APPENDIX A5**

**NONRESIDENTIAL VOLUNTARY MEASURES**

**DIVISION A5.3 WATER EFFICIENCY AND CONSERVATION**

**SECTION A5.303**

## INDOOR WATER USE

**A5.303.2.3.1 Tier 1 – 30% Savings [DSA-SS] 30 % savings..** A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 30% shall be provided. The reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code. The 30% reduction in potable water use shall be demonstrated by one of the following methods.

1. Prescriptive method. Each plumbing fixture and fitting shall ~~meet the 30% reduced flow rate~~ not exceed the maximum flow rate at ≥30 percent reduction as specified in Table A5.303.2.1, or
2. Performance method. A calculation demonstrating a 30% reduction in the building “water use baseline” as established in Table 5.303.1 shall be provided.

**TABLE A5.303.2.2  
WATER USE BASELINE <sup>4 3</sup>**

FIXTURE TYPE	<u>BASELINE FLOW RATE</u> <sup>2</sup>	DURATION	DAILY USES	OCCUPANTS <sup>3 2</sup>
Showerheads	2.5 gpm @ 80 psi	8 min.	1	X
Lavatory faucets nonresidential	2-2 .5 gpm @ 60 psi	.25 min.	3	X
Kitchen faucets	2.6 gpm @ 60 psi	4 min.	1	X
Replacement aerators	2.6 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.	1 male <sup>1</sup> 3 female	X
Gravity tank type water closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 3 female	X
Flushometer tank water closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 3 female	X
Flushometer valve water closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 3 female	X
Electromechanical hydraulic water closets	1.6 gallons/flush	1 flush	1 male <sup>1</sup> 3 female	X
Urinals	1.6 gallons/flush	1 flush	2 male	X

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 2. Refer to Table A, Chapter 4, 2007 *California Plumbing Code*, for occupant load factors.
- 4 3. Use worksheet WS-1 to calculate base line water use.

**Table A5.303.2.3.1  
FIXTURE FLOW RATES**

FIXTURE TYPE	<u>BASELINE FLOW-RATE</u> <sup>2</sup>	<u>MAXIMUM FLOW RATE AT ≥ 30% REDUCTION</u>
Showerheads	2.5 gpm @ 80 psi	1.8 gpm @ 80 psi
Lavatory Faucets Non-residential	0.5 gpm @ 60 psi	0.35 gpm @ 60 psi <sup>2</sup>
Kitchen Faucets	2.2 gpm @ 60 psi	1.6 5 gpm @ 60 psi <sup>2</sup>
Wash Fountains	2.2 [rim space(in.) / 20 gpm @ 60 psi]	1.6 [rim space(in.) / 20 gpm @ 60 psi]
Metering Faucets	0.25 gallons/cycle	0.18 gallons/cycle
Metering Faucets for Wash Fountains	.25 [rim space(in.) / 20 gpm @ 60 psi]	.18 [rim space(in.) / 20 gpm @ 60 psi]
Gravity tank type Water Closets	1.6 gallons/flush	1.12 gallons/flush <sup>1</sup>
Flushometer Tank Water Closets	1.6 gallons/flush	1.12 gallons/flush <sup>1</sup>
Flushometer Valve	1.6 gallons/flush	1.12 gallons/flush <sup>1</sup>

Water Closets		
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1.12 gallons/flush <sup>1</sup>
Urinals	1.0 gallons/flush	.5 gallons/flush

<sup>1</sup> Includes water closets with an effective flush rate of 1.12 gallons or less when tested per ASME A112.19.2 and ASME A112.19.14.

<sup>2</sup> See Table 5.503.2.3 for additional notes and references.

...

**A5.303.3 Appliances and fixtures for commercial application.** Appliances and fixtures shall meet the following:

1. Clothes washer shall have a maximum Water Factor (WF) that will reduce the use of water by 10% below the California Energy Commissions' WF standards for commercial clothes washers located in Title 20 of the California Code of Regulations.
2. Dishwashers shall meet the following water use standards:
  - a. Residential—5.8 gallons (21.9 L) per cycle
  - b. Commercial—refer to Table 603.3

**TABLE A5.303.3  
COMMERCIAL DISHWASHER WATER USE**

Type	High-Temperature— maximum gallons per rack	Chemical—maximum gallons per rack
Conveyer	0.70 (2.6 L)	0.62 (4.4 L)
Door	0.95 (3.6 L)	1.16 (2.6 L) [BSC] 2.26 (8.6 L) [DSA-SS]
Undercounter	0.90 (3.4 L)	0.98 (3.7 L)

3. Ice makers shall be air cooled.
4. Food steamers shall be connection-less or boiler-less.
5. [BSC] The use and installation of water softeners that discharge to the community sewer system shall may be limited or prohibited by local agencies if certain conditions are met.
6. Combination ovens shall not consume more than 10 gph (38 L/h) in the full operational mode.
7. Commercial pre-rinse spray valves manufactured on or after January 1, 2006 shall function at equal to or less than 1.6 gpm (0.10 L/s) at 60 psi (414 kPa) and
  - a. Be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate
  - b. Be equipped with an integral automatic shutoff
  - c. Operate at static pressure of at least 30 psi (207 kPa) when designed for a flow rate of 1.3 gpm (0.08 L/s) or less

...

**SECTION A5.304  
OUTDOOR WATER USE**

...

**A5.304.2.1. Outdoor potable water use.** For new water service not subject to the provisions of Water Code Section 535, separate meters or submeters shall be installed for indoor and outdoor potable water use for landscaped areas between of at least 500 square feet and but not more than 1000 square feet (the level at which Section 5.304.2c applies).

...

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

**APPENDIX A5**

**NONRESIDENTIAL VOLUNTARY MEASURES**

**DIVISION A5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**

...

**SECTION A5.402  
DEFINITIONS**

...

**EUTROPHICATION.** Excessive growth of aquatic plants, especially algae, producing bacteria which consume nearly all the oxygen required to sustain fauna and other flora.

...

**LIFE CYCLE ASSESSMENT (LCA).** A technique to evaluate the relevant energy and material consumed and environmental impacts emissions associated with the entire life of a product, process, activity or service, including a whole building.

...

**LIFE CYCLE INVENTORY (LCI).** A process of quantifying energy and raw material requirements, atmospheric emissions, waterborne emissions, solid wastes, and other releases for the entire life cycle of a product, process, or activity, including a whole building.

...

## SECTION A5.405 MATERIAL SOURCES

...

**A5.405.4 Recycled content, Tier 1 [BSC] Recycled content [DSA-SS]** Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) for a minimum of 10% of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.

**A5.405.4.1 Recycled content, Tier 2 [BSC]** Use materials, equivalent in performance to virgin materials, with post-consumer or pre-consumer recycled content value (RCV) for a minimum of 15% of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.

$$\text{Total Recycled Content} = \frac{[\sum \text{RCV}_{M1+2\dots} + \text{RCV}_{A1+2\dots}]}{\text{Total Material Cost}^1} \quad (\text{Equation A5.4-1})$$

**A5.405.4.2 Determination of recycled content value (RCV<sub>M</sub>). [BSC, DSA-SS]** The recycled content of a material assembly shall be determined by weight or percentage of recycled content in the product. The percentage of recycled content or the fractional value of the weight is then multiplied by the total estimated cost of the material assembly excluding fees, labor costs, and overhead.

$$\text{RCV}_M = \text{Material Cost}^2 \times (\% \text{post-consumer content} + \frac{1}{2} \% \text{pre-consumer content}) \quad (\text{Equation A5.4-2})$$

**A5.405.4.2.1 Assemblies.** An assembly product that has been formulated using multiple materials shall consider each material separately to calculate the RCV<sub>A</sub>. Use Equation A5.4-3 to determine RCV<sub>A</sub>.

$$\text{RCV}_A = \frac{\sum \text{RCV}_M \times \text{Assembly cost}}{\text{Total Assembly Cost}} \quad (\text{Equation A5.4-3})$$

**A5.405.4.3 Concrete.** When Supplementary Cementitious Materials (SCM) are used in concrete, the RCV shall be based on the weight or percentage of cement replaced rather than the entire concrete mix. Material cost shall be based on the cost of the cement plus the SCM.

**A5.405.4.4 Steel products.** Steel products may use a default recycled content of 25% when recycled content information is not available.

**Note:** Sources and recycled content of some recycled materials can be found at <http://www.ciwmb.ca.gov/RCP/Product.asp?VW=CAT&CATID=257>.

<sup>1</sup> Total Material Costs is the estimated or actual material costs of the project excluding appliances, equipment, furniture and furnishings.

<sup>2</sup> Material Cost is the estimated or actual cost of the material including taxes but shall not include fees, labor and installation costs, or overhead.

...

**A5.405.5 Cement and concrete.** Use cement and concrete made with recycled products and complying with the following sections.

**A5.405.5.1 Cement.** Cement shall comply with one of Meet the following standards for cement:

1. Portland Cement shall meet ASTM C 150, Standard Specification for Portland Cement
2. Blended Cement shall meet ASTM C 595, Standard Specification for Blended Hydraulic Cement or
3. Other Hydraulic Cements shall meet ASTM C 1157, Standard Performance Specification for Hydraulic Cement.

**A5.405.5.2 Concrete.** Unless otherwise directed by the Engineer of Record, use concrete manufactured with cementitious materials in accordance with Sections A5.405.5.2.1 and A5.405.5.2.1.1, as approved by the enforcing agency.

**A5.405.5.2.1 Supplementary cementitious materials (SCMs).** Use concrete made with one or more of the following supplementary cementitious materials (SCMs) conforming to the following standards:

1. Fly ash ~~meeting~~ conforming to ASTM C 618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete-
- 5 2. Slag cement (GGBFS) ~~meeting~~ conforming to ASTM C 989, Specification for Slag Cement ~~Ground Granulated Blast-Furnace Slag~~ for Use in Concrete and Mortars-
- 6 3. Silica fume ~~meeting~~ conforming to ASTM C 1240, Specification for Silica Fume Used in Cementitious Mixtures.
4. Natural pozzolan ~~meeting~~ conforming to ASTM C 618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
5. Blended supplementary cementitious materials conforming to ASTM C 1697, Standard Specification for Blended Supplementary Cementitious Materials. The amount of each SCM in the blend will be used separately in calculating Equation A5.4-1. If Class C fly ash is used in the blend, it will be considered to be "SL" for the purposes of satisfying the equation.
- 2 6. Ultra fine fly ash (UFFA) ~~meeting~~ conforming to ASTM C 618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete, and ~~CalTrans Standard Specification, Section 90-2.01B~~ the following chemical and physical requirements:

<u>Chemical Requirements</u>	<u>Percent</u>
<u>Sulfur Trioxide (SO<sub>3</sub>)</u>	<u>1.5 max.</u>
<u>Loss on ignition</u>	<u>1.2 max.</u>
<u>Available Alkalies (as Na<sub>2</sub>O) equivalent</u>	<u>1.5 max.</u>

<u>Physical Requirements</u>	<u>Percent</u>
<u>Particle size distribution</u>	
<u>Less than 3.5 microns</u>	<u>50</u>
<u>Less than 9.0 microns</u>	<u>90</u>
<u>Strength Activity Index with portland cement</u>	
<u>7 days</u>	<u>95 (minimum % of control)</u>
<u>28 days</u>	<u>110 (minimum % of control)</u>
<u>Expansion at 16 days when testing job materials in conformance with ASTM C 1567*</u>	<u>0.10 max.</u>

\* In the test mix, cement shall be replaced with at least 12% UFFA by weight.

- 3 7. Metakaolin ~~meeting~~ conforming to ASTM C 618, Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete, and ~~CalTrans Standard Specification, Section 90-2.01B~~ the following chemical and physical requirements:

<u>Chemical Requirements</u>	<u>Percent</u>
<u>Silicon Dioxide (SiO<sub>2</sub>) + Aluminum Oxide (Al<sub>2</sub>O<sub>3</sub>)</u>	<u>92.0 min.</u>
<u>Calcium Oxide (CaO)</u>	<u>1.0 max.</u>
<u>Sulfur Trioxide (SO<sub>3</sub>)</u>	<u>1.0 max.</u>
<u>Loss on ignition</u>	<u>1.2 max.</u>
<u>Available Alkalies (as Na<sub>2</sub>O) equivalent</u>	<u>1.0 max.</u>

<u>Physical Requirements</u>	<u>Percent</u>
<u>Particle size distribution</u>	
<u>Less than 45 microns</u>	<u>95</u>
<u>Strength Activity Index with portland cement</u>	
<u>7 days</u>	<u>100 (minimum % of control)</u>
<u>28 days</u>	<u>100 (minimum % of control)</u>

- 7 8. Other materials with comparable or superior environmental benefits, as approved by the Engineer of Record and enforcing authority.

**Note:** ~~CalTrans specifications for UFFA and metakaolin may be found the 2009-09 updates to the 2006 CalTrans specifications.~~

**A5.405.5.2.1.1 Mix design equation.** Use any combination of one or more SCMs, satisfying Equation A5.4-4. When ASTM C 595 or ASTM C 1157 cement is used, the amount of SCM in these cements shall be used in calculating Equation A5.4-1.

**Exception:** Minimums in mix designs approved by the Engineer of Record may be lower where high early strength is needed for concrete products or to meet an accelerated project schedule.

$$F/25 + SL/50 + UF/12 \geq 1 \quad \text{Equation A5.4-4}$$

Where: F = Fly ash, natural pozzolan, or other approved SCM, as a percent of total cementitious

material for concrete on the project

SL = GGBFS, ~~including the amount in blended cement, as a~~ percent of total cementitious material for concrete on the project

UF = Silica fume, metakaolin, or UFFA, ~~including the amount in blended cement, as a~~ percent of total cementitious material for concrete on the project

**Exception:** ~~Minimums for concrete products requiring high early strength may be lower as directed by the engineer.~~

**A5.405.5.3 Additional means of compliance.** Any of the following measures ~~may~~ shall be permitted to be employed for the production of cement or concrete, depending on their availability and suitability, in conjunction with A5.405.5.2.

**A5.405.5.3.1 Cement.** The following measures ~~may~~ shall be permitted to be used in the manufacture of cement.

**A5.405.5.3.1.1 Alternative fuels.** ~~The use of alternative fuels w~~Where permitted by state or local air quality standards, use alternative fuels.

**A5.405.5.3.1.2 Alternative power.** ~~Use a~~ Alternate electric power generated at the cement plant and/or green power purchased from the utility meeting the requirements of A5.211.

**A5.405.5.3.1.3 Alternative ingredients.** ~~Use inorganic processing additions and limestone meeting ASTM C 150, Standard Specifications for Portland Cement.~~

**A5.405.5.3.2 Concrete.** The following measures ~~may~~ shall be permitted to be used in the manufacture of concrete:

**A5.405.5.3.2.1 Alternative energy.** ~~Use r~~ Renewable or alternative energy meeting the requirements of Section A5.211.

**A5.405.5.3.2.2 Recycled aggregates.** ~~Use e~~ Concrete made with one or more of the following materials:

1. Blast furnace slag as a lightweight aggregate in ~~non un~~reinforced concrete.
2. Recycled concrete that meets grading requirements of ASTM C 33, Standard Specification for Concrete Aggregates.
3. Other materials with comparable or superior environmental benefits, as approved by the engineer and enforcing authority.

**A5.405.5.3.2.3 Mixing water.** ~~Use w~~ Water recycled by the local water purveyor or water reclaimed from manufacturing processes and conforming to meeting ASTM C1602, Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete, either recycled water provided by the local water purveyor or water reclaimed from manufacturing processes.

**A5.405.5.3.2.4 High strength concrete.** ~~Concrete elements designed to reduce their total size compared to standard 3,000 psi concrete, thereby reducing the total volume of cement, aggregate and water used on the project, as approved by the Engineer of Record.~~

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## SECTION A5.407 [OSHPD 1, 2 & 4] WATER RESISTANCE AND MOISTURE MANAGEMENT

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## SECTION A5.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL, AND RECYCLING

**A5.408.3.1 Enhanced construction waste reduction – Tier 1.** Divert to recycle or salvage at least 65% of non-hazardous construction and demolition debris waste generated at the site, ~~in compliance with one of the following:~~

~~Tier 1. At least a 65% reduction.~~ **A5.408.3.1.1 Enhanced construction waste reduction – Tier 2.** Divert to recycle or salvage at least 80% of non-hazardous construction and demolition waste generated at the site.

~~Tier 2. At least an 80% reduction.~~

**A5.408.3.1.4.2 Verification of compliance.** A copy of the completed waste management report or documentation of certification of the waste management company utilized shall be provided.

### 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.
3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets, where demolition of an existing structure(s) is necessary for the construction of a new structure.

**A5.408.5 Construction waste diversion [OSHPD 1, 2 & 4].** Establish a construction waste management plan . . .

**A5.408.6 Construction waste reduction of at least 50% [OSHPD 1, 2 & 4].** Recycle and/or salvage for reuse a

minimum of 50% of the non-hazardous construction and demolition debris . . .

## **SECTION A5.409 LIFE CYCLE ASSESSMENT**

**A4.409.1 General.** Life cycle assessment shall be ISO 14044 compliant. The service life of the building and materials assemblies shall not be less than 60 years unless designated in the construction documents as having a shorter service life as approved by the enforcing agency.

**A5.409.2 Whole building life cycle assessment.** Conduct a whole building life assessment showing that the building project achieves at least a 10 percent improvement in environmental performance including operating energy use compared to a reference building meeting the 2010 California Energy Code of similar size, function and complexity for at least three of the impacts listed in Section A5.409.1.3, one of which shall be climate change.

**A5.409.2.2 Building components.** The building envelope, structural elements, including footings and foundations, interior ceilings, walls, and floors; and exterior finishes shall be considered in the assessment.

**Exceptions:**

1. Plumbing, mechanical and electrical systems and controls; fire and smoke detection and alarm systems and controls; and conveying systems.
2. Interior finishes are not required to be included.

**Notes:**

1. Software for calculating whole building life cycle assessments includes those found at the Athena Institute website (Impact Estimator software), the PE International website (GaBi software), and the PRe Consultants website (SimaPro software).
2. Interior finishes, if included, may be assessed using the NIST BEES tool.

**A5.409.2.3 Impacts to be considered.** Select from the following impacts in the assessment:

1. Climate change (greenhouse gases)
2. Fossil fuel depletion
3. Stratospheric ozone depletion
4. Acidification of land and water sources
5. Eutrophication
6. Photochemical oxidants (smog)

**A5.409.2.4 Life cycle inventory.** The following data derived from Life Cycle Inventory shall be reported in the assessment:

1. Use of renewable primary energy
2. Depletion of non-renewable material resources
3. Use of renewable material resources
4. Consumption of fresh water

**A5.409.3 Materials and system assemblies.** If whole building analysis of the project is deemed unfeasible, s Select a minimum of 50% of materials or assemblies based on life cycle assessment of at least three of the impacts listed in Section A5.409.2.3, one of which shall be climate change of their embodied energy and/or green-house gas emission potentials.

**Notes:**

- 4- Software for calculating life cycle assessments costs for materials assemblies and materials may be found at:  
a. the Athena Institute web site;  
b. and ;† the NIST BEES web site.  
c. Life Cycle assessment may also be done in accordance with ISO Standard 14044.

**A5.409.4 Substitution for prescriptive standards.** Performance of a life cycle assessment completed in accordance with Section A5.409.2 may be substituted for other prescriptive Material Conservation and Resource Efficiency provisions of Division A5.4, including those made mandatory through local adoption of Tier 1 or Tier 2 in Division A5.6.

**A5.409.5 Verification of compliance.** Documentation of compliance shall be provided as follows:

1. The assessment is performed in accordance with ISO 14044.
  2. The project meets the requirements of other parts of Title 24.
  3. A copy of the analysis shall be made available to the enforcement authority.
  4. A copy of the analysis and any maintenance or training recommendations shall be included in the operation and maintenance manual.
2. ~~More information on life cycle assessment may be found at the Sustainable Products Purchasers Coalition: [www.sppcoalition.org](http://www.sppcoalition.org); at the American Center for Life Cycle Assessment: [www.lcacenter.org](http://www.lcacenter.org); at U.S. EPA Life Cycle Assessment Research: [www.epa.gov/nrmrl/lcaccess/index.html](http://www.epa.gov/nrmrl/lcaccess/index.html); and at U.S. EPA Environmentally Preferable Products, [www.epa.gov/epp](http://www.epa.gov/epp).~~

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**SECTION A5.410  
BUILDING MAINTENANCE AND OPERATION**

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**A5.410.6 Recycling by occupants [OSHDP 1, 2 & 4].** Provide readily accessible areas that serve the entire building and are identified for the depositing, storage, and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

**APPENDIX A5**

**NONRESIDENTIAL VOLUNTARY MEASURES**

**DIVISION A5.5 ENVIRONMENTAL QUALITY**

**SECTION A5.502  
DEFINITIONS**

**A5.502.1 Definitions.** . . .

**NO ADDED FORMALDEHYDE (NAF) BASED RESINS.** 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. See CCR, Title 17, Section 93120.1(a).

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**ULTRA-LOW EMITTING FORMALDEHYDE (ULEF) RESINS.** Resins formulated such that average formaldehyde emissions are consistently below the Phase 2 emission standards in section 93120.2 of Title 17, as provided in section 93120.3(d) of Title 17, California Code of Regulations. See CCR, Title 17, Section 93120.1(a).

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**SECTION A5.504  
POLLUTANT CONTROL**

**A5.504.1 Indoor air quality (IAQ) during construction.** Maintain IAQ as provided in Sections A5.504.1.1 and A5.504.1.2.

**A5.504.1.1 Temporary ventilation.** Provide temporary ventilation during construction in accordance with Section 121 (Requirements for Ventilation) of the California Energy Code, CCR, Title 24, Part 6, and Chapter 4 of CCR, Title 8, and as follows:

1. Ventilation during construction shall be achieved through openings in the building shell using fans to produce a minimum of three air changes per hour.
- ~~2. During dust-producing operations, protect supply and return HVAC system openings from dust.~~
- ~~3. The permanent HVAC system shall only be used during construction if necessary to condition the building within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2 1999, or an average efficiency of 30% based on ASHRAE 52.1 1992. Replace all filters immediately prior to occupancy.~~
4. If the building is occupied during demolition or construction, meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3.

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**A5.504.2 IAQ Post-construction.** After all interior finishes have been installed, flush out the building by supplying continuous ventilation with all air handling units at their maximum outdoor air rate and all supply fans at their maximum position and rate for at least 14 days.

1. During this time, maintain an internal temperature of at least 60 °F, and relative humidity no higher than 60%. If extenuating circumstances make these temperature and humidity limits unachievable, the flush out may be conducted under conditions as close as possible to these limits, provided that documentation of the extenuating circumstances is provided in writing.
2. Occupancy may start after 4 days, provided flush-out continues for the full 14 days. During occupied times, the thermal comfort conditions of Title 24 must be met.
3. For buildings that rely on natural ventilation, exhaust fans and floor fans must be used to improve air mixing and removal during the 14-day flush out, and windows should remain open.

4. Do not "bake out" the building by increasing the temperature of the space.
5. (If continuous ventilation is not possible, flush-out must total the equivalent of 14 days of maximum outdoor air.) The equivalent of 14 days of maximum outdoor air (the target air volume) shall be calculated by multiplying the maximum feasible air flow rate (in ft<sup>3</sup>/m) by 14 days (20,160 minutes). The air volumes for each period of ventilation are then calculated and summed, and the flush out continues until the total equals the target air volume.

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**A5.504.4.5.1 Early compliance with formaldehyde limits, Tier 1.** ~~Where complying composite wood product is readily available for non-residential occupancies, meet~~ Meet the requirements contained in Table A5.504.8.5 before the compliance dates indicated in Table A5.504.8.5. (Tier 1), or use composite wood products made with either CARB approved no-added formaldehyde (NAF) resins or CARB approved ultra-low emitting formaldehyde (ULEF) resins (Tier 2).

**A5.504.4.5.2 No added formaldehyde, Tier 2.** Use composite wood products approved by the California Air Resources Board (ARB) as no-added formaldehyde (NAF) based resins or ultra-low emitting formaldehyde (ULEF) resins.

**Notes:**

1. For Tier 2 requirements, see Title 17, Section 93120.3(c) and (d), respectively.
2. Documentation must be provided verifying that materials are certified to meet the pollutant emission limits. A list of manufacturers and their NAF and ULEF certified materials is provided at: [http://www.arb.ca.gov/toxics/compwood/naf\\_ulef/listofnaf\\_ulef.htm](http://www.arb.ca.gov/toxics/compwood/naf_ulef/listofnaf_ulef.htm)

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**A5.504.4.7 Resilient flooring systems, Tier 1 [DSA-SS] Resilient flooring systems.** For 80% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its ~~Low-emitting Materials List (or Product Registry)~~ High Performance Products Database; products compliant with CHPS criteria certified under the Greenguard Children & Schools program; or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 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.)

**A5.504.4.7.1 Resilient flooring systems, Tier 2.** For 90% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its ~~Low-emitting Materials List (or Product Registry)~~ High Performance Products Database; products compliant with CHPS criteria certified under the Greenguard Children & Schools program; or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program; or meet California Department of Public Health 2010 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.)

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**A5.504.4.8 Thermal insulation, Tier 1 [DSA-SS] Thermal insulation.** Comply with the following standards:

1. Chapter 12-13 in Title 24, Part 12, the California Referenced Standards Code;
2. ~~and with~~ The VOC-emission limits defined in 2009 CHPS criteria and listed on its ~~Low-emitting Materials List (or Product Registry)~~ High Performance Products Database;
3. California Department of Public Health 2010 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.)

**A5.504.4.8.1 Thermal insulation, Tier 2.** ~~Install No-Added Formaldehyde thermal insulation in addition to meeting the 2009 CHPS criteria and listed on its Low-Emitting Materials List (or Product Registry)~~ which complies with Tier 1 plus does not contain any added formaldehyde.

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**A5.504.4.9 Acoustical ceilings and wall panels.** Comply with Chapter 8 in Title 24, Part 2, the California Building Code, and with the VOC-emission limits defined in the 2009 CHPS criteria and listed on its ~~Low-emitting Materials List, [BSC, OSHPD 1, 2 & 4] (or Product Registry)~~ High Performance Products Database.

...

**A5.504.8 Finish material pollutant control [OSHPD 1, 2 & 4].** Finish materials shall comply with Sections A5.504.4.1 through A5.504.4.4 5.

...

**A5.504.9 Environmental tobacco smoke (ETS) control [OSHPD 1, 2 & 4].** Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and ~~in buildings~~ within the building, if not already prohibited by other laws or regulations, or as enforced by ordinances, regulations, or policies of any city, county, city and county, California Community College, campus of the California

State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations, or policies are not in place, post signage to inform building occupants of the prohibitions.

**SECTION A5.505 [OSHPD 1, 2 & 4]  
INDOOR MOISTURE CONTROL**

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Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.

**APPENDIX A5**

**NONRESIDENTIAL VOLUNTARY MEASURES**

**DIVISION A5.6 VOLUNTARY TIERS**

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

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**A5.601.2 CALGreen TIER 1**

**A5.601.2.1 Prerequisites.** To achieve *CALGreen* Tier 1 status, a project must meet all of the mandatory measures in Chapter 5, and, in addition, meet the provisions of this section.

**A5.601.2.2 Energy performance.** For the purposes of energy efficiency standards in this code the California Energy Commission will continue to adopt mandatory building standards.

Using an Alternative Calculation Method approved by the California Energy Commission, calculate each nonresidential building's annual TDV regulated energy use components and CO<sub>2</sub> emissions, and compare ~~it~~ them to the standard or "budget" building.

**Exception:** The "percent better than" calculation omits Process and Receptacle energy use components in comparing the Standard and Proposed energy use.

**A5.601.2.3 Tier 1.** Exceed California Energy Code requirements, based on the ~~2008 Energy Efficiency Standards~~ 2010 California Energy Code, by 15%. Field verify and document the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Nonresidential Alternative Calculation Method Manual.

**A5.601.2.4 Voluntary measures for CALGreen Tier 1.** In addition to the provisions of Sections A5.601.2.1 and A5.601.2.3 above, compliance with the following voluntary measures from Appendix A5 is required for Tier 1:

1. From Division A5.1,
- ...
2. From Division A5.3,
  - a) Comply with the 30 percent reduction for indoor potable water use in Section A5.303.2.1.
  - b) Comply with ~~the reduction in outdoor potable water use in~~ Section A5.304.4.1 for outdoor potable water use not to exceed 60 percent of ETo.
  - c) Comply with one elective measure selected from this division.
3. From Division A5.4,<sup>2</sup>

...

**A5.601.3 CALGreen TIER 2**

**A5.601.3.1 Prerequisites.** To achieve *CALGreen* Tier 2 status, a project must meet all of the mandatory measures in Chapter 5, and, in addition, meet the provisions of this section.

**A5.601.3.2 Energy performance.** For the purposes of energy efficiency standards in this code the California Energy Commission will continue to adopt mandatory building standards.

Using an Alternative Calculation Method approved by the California Energy Commission, calculate each nonresidential building's annual TDV regulated energy use components and CO<sub>2</sub> emissions, and compare ~~it~~ them to the standard or "budget" building.

**Exception:** The "percent better than" calculation omits Process and Receptacle energy use components in comparing the Standard and Proposed energy use.

**A5.601.3.3 Tier 2.** Exceed California Energy Code requirements, based on the ~~2008 Energy Efficiency Standards~~ 2010 California Energy Code, by 30%. Field verify and document the measures and calculations used to reach the desired level of efficiency following the requirements specified in the Title 24 Nonresidential Alternative Calculation Method Manual.

**A5.601.3.4 Voluntary measures for CALGreenTier 2.** In addition to the provisions of Sections A5.601.3.1 and A5.601.3.3 above, compliance with the following voluntary measures from Appendix A5 and additional elective measures shown in Table A5.601.3.4 is required for Tier 2:

1. From Division A5.1,

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2. From Division A5.3,

a) Comply with the 35 percent reduction for indoor potable water use in Section A5.303.2.1.

b) Comply with ~~the reduction in outdoor potable water use in Section A5.304.4.2~~ for outdoor potable water use not to exceed 55 percent of ETo.

c) Comply with three elective measures selected from this division.

3. From Division A5.4,<sup>2</sup>

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<sup>2</sup> Life cycle assessment compliant with Section A5.409.4 in this code may be substituted for prescriptive measures from Division A5.4.

**Table A5.601: NON-RESIDENTIAL BUILDINGS: Green Building Standards Code  
Proposed Performance Approach**

Note: This table is intended only as an aid in illustrating the nonresidential tier structure

<u>Category</u>	<u>Environmental Performance Goal</u>	<u>Tier 1</u>	<u>Tier 2</u>
<u>All</u>	<u>Minimum Mandatory</u>	<u>Meet all of the provisions of Chapter 5</u>	<u>Meet all of the provisions of Chapter 5</u>
<u>Planning and Design</u>	<u>Designated Parking for Fuel Efficient Vehicles</u>	<u>10 percent of total spaces</u>	<u>12 percent of total spaces</u>
	<u>Cool Roof to Reduce Heat Island Effect</u>	<u>Roof Slope &lt; 2:12 SRI 64</u> <u>Roof Slope &gt; 2:12:</u> <u>&lt; 5 lb/s.f. SRI 16</u> <u>≥ 5 lb/s.f. SRI 10</u>	<u>Roof Slope &lt; 2:12 SRI 78</u> <u>Roof Slope &gt; 2:12:</u> <u>&lt; 5 lb/s.f. SRI 23</u> <u>≥ 5 lb/s.f. SRI 30</u>
		<u>1 additional Elective from Division A5.1</u>	<u>3 additional Electives from Division A5.1</u>
<u>Energy Efficiency</u>	<u>Energy Performance</u>	<u>Exceed 2010 CA Energy Code by 15 percent</u>	<u>Exceed 2010 CA Energy Code by 30 percent</u>
<u>Water Efficiency and Conservation</u>	<u>Indoor Water Use</u>	<u>30 percent Savings</u>	<u>35 percent Savings</u>
	<u>Outdoor Water Use</u>	<u>Not exceed 60 percent of ETo times the landscape area</u>	<u>Not exceed 55 percent of ETo times the landscape area</u>
		<u>1 additional Elective from Division A5.3</u>	<u>3 additional Electives from Division A5.3</u>
<u>Material Conservation and Resource Efficiency<sup>2</sup></u>	<u>Construction Waste Reduction</u>	<u>At least 65 percent reduction</u>	<u>At least 80 percent reduction</u>
	<u>Recycled Content</u>	<u>Utilize recycled content materials for 10 percent of total material cost</u>	<u>Utilize recycled content materials for 15 percent of total material cost</u>
		<u>1 additional Elective from Division A5.4</u>	<u>3 additional Electives from Division A5.4</u>
<u>Environmental Quality</u>	<u>Low-VOC Resilient Flooring</u>	<u>80 percent of flooring meets VOC limits</u>	<u>90 percent of flooring meets VOC limits</u>
	<u>Low-VOC Thermal Insulation</u>	<u>Comply with VOC limits</u>	<u>Install no-added formaldehyde insulation &amp; comply VOC limits</u>
		<u>1 additional Elective from Division A5.5</u>	<u>3 additional Electives from Division A5.5</u>
<u>Additional Measures</u>	<u>Added measures shall be achieved across at least 3 categories</u>	<u>1 Additional Elective</u>	<u>3 Additional Electives</u>
<u>Approximate Total Measures</u>		<u>14</u>	<u>24</u>

Notation:

**Authority** – Health and Safety Code Sections 18930.5, 18934.5 and 18938 (b).

**Reference** – Health and Safety Code, Division 13, Part 2.5, commencing with Section 18901.