

**EXPRESS TERMS
FOR
PROPOSED BUILDING STANDARDS
OF THE
DIVISION OF THE STATE ARCHITECT- STRUCTURAL SAFETY (DSA-SS)**

**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 Repealed text: All such language appears in ~~strikeout~~.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 Division of the State Architect – Structural Safety (DSA-SS) 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

[DSA-SS]

...

CHAPTER 2

SECTION 202

DEFINITIONS

[DSA-SS]

ARB (CARB). The California Air Resources Board.

...

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

...

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

CHAPTER 3

GREEN BUILDING

SECTION 301

GENERAL

301.1 Scope. [DSA-SS]...

SECTION 302

MIXED OCCUPANCY BUILDINGS

302.1 Mixed Occupancy buildings. [DSA-SS]...

SECTION 303

PHASED PROJECTS

303.1 Phased projects. [DSA-SS]...

**SECTION 306
VOLUNTARY MEASURES**

306.1 Purpose. [DSA-SS] . . .

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

**CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES**

DIVISION 5.1 PLANNING AND DESIGN

. . .

**SECTION 5.102
DEFINITIONS
[DSA-SS]**

. . .

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

. . .

**SECTION 5.106
SITE DEVELOPMENT**

5.10 General [DSA-SS] . . .

5.102 Definitions [DSA-SS] . . .

. . .

[The following section is moved from voluntary Appendix A5 to mandatory Chapter 5]

5.106.8 Light pollution reduction. [DSA-SS] Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code; and
2. Backlight, Uplight and Glare (BUG) ratings as defined in IESNA TM-15-07; and
3. Allowable BUG ratings not exceeding those shown in Table A5.106.8, or

Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Exceptions:

1. Luminaires that qualify as exceptions in Section 147 of the California Energy Code
2. Emergency lighting

Note: See also California Building Code, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways.

TABLE A5.106.8
Maximum Allowable Backlight, Uplight and Glare (BUG) Ratings¹

Allowable Rating	Lighting Zone 1	Lighting Zone 2	Lighting Zone 3	Lighting Zone 4
Allowed Backlight Rating				
Greater than 2 mounting heights from property line	B3	B4	B5	B5
1 – 2 mounting heights from property line and oriented with B towards the property line	B2	B3	B4	B4
0.5 – 1 mounting height from property line and oriented with B towards the property line	B1	B2	B3	B3
Less than 0.5 mounting height from property line adjacent to a street and oriented with B towards the property line ²	B0	B1	B2	B3
Less than 0.5 mounting height from property line and oriented with B towards the property line	B0	B0	B1	B2

Allowed Uplight Rating	U0	U1	U2	U3
Allowed Glare Rating ²	G1	G2	G3	G4
Allowed Glare Rating, Building Mounted Luminaires ³				
Greater than 2 mounting heights to any property line	G1	G2	G3	G4
1 – 2 mounting heights to any property line	G0	G1	G1	G2
0.5 – 1 mounting heights to any property line	G0	G0	G1	G1
Less than 0.5 mounting height to any property line	G0	G0	G0	G1

¹ IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the California Energy Code and Chapter 10 of the California Administrative Code.

² For purposes of compliance with this section, the property line may be considered to be the centerline of a public roadway or transit line. For properties adjacent to public walkways, bikeways, plazas and parking lots, the property line may be considered to be five feet beyond the site boundary.

³ Building-mounted luminaires that cannot be mounted with their backlight to the property line shall meet the Allowed Glare rating for all luminaires. Light from a building-mounted luminaire shall not exceed the Backlight rating in the direction of the property line.

...

5.106.10 Grading and Paving. [DSA-SS] ~~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 – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

CHAPTER 5

NONRESIDENTIAL MANDATORY MEASURES

SECTION 5.201 ENERGY EFFICIENCY

5.201.1 Scope. [BSC] California Energy Code. [DSA-SS] . . .

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

CHAPTER 5

NONRESIDENTIAL MANDATORY MEASURES

SECTION 5.303 INDOOR WATER USE

5.301.1 General [DSA-SS] . . .

5.302.1 Definitions [DSA-SS] . . .

5.303.2 20% Savings. [DSA-SS] 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 ^{4 3}
[DSA-SS]**

Fixture Type	Baseline Flow-rate ²	Duration	Daily uses	Occupants ^{2, 3, 4 3}
Showerheads	2.5 gpm @ 80 psi	5 min.	1	X ²
Lavatory faucets, residential	2.2 gpm @ 60 psi	.25 min.	3	X
Lavatory Faucets Nonresidential	0.5 gpm @ 60 psi	.25 min.	3	X ²
Kitchen Faucets	2.2 gpm @ 60 psi	4 min.	1	X
Replacement Aerators	2.2 gpm @ 60 psi			X
Wash Fountains	2.2 [rim space (in.) / 20 gpm @ 60 psi]			X
Metering Faucets	0.25 gallons/cycle	.25 min.	3	X
Metering Faucets for Wash Fountains	.25 [rim space (in.) / 20 gpm @ 60 psi]	.25 min.		X
Gravity tank type Water Closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
Flushometer Tank Water Closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
Flushometer Valve Water Closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
Urinals	1.0 gallons/flush	1 flush	2 male	X

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

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, California Plumbing Code, for occupant load factors.

(a) Shower use by occupants depends on the type of use of a building or portion of a building, e.g., total occupant load for a health club, but only a fraction of the occupants in an office building as determined by the anticipated number of users.

(b) Nonresidential kitchen faucet use is determined by the occupant load of the area served by the fixture.

^{4 3} Use Worksheet WS-1 to calculate base line water use.

**TABLE 5.303.2.3 FIXTURE FLOW RATES
[DSA-SS]**

Fixture Type	Baseline Flow-rate	Maximum flow rate at ≥ 20% Reduction
Showerheads	2.5 gpm @ 80 psi	2 gpm @ 80 psi
<u>Lavatory faucets, residential</u>	<u>2.2 gpm @ 60 psi</u>	<u>1.5 gpm @ 60 psi¹</u>
Lavatory Faucets Nonresidential	0.5 gpm @ 60 psi	0.4 gpm @ 60 psi ³
Kitchen Faucets	2.2 gpm @ 60 psi	1.8 gpm @ 60 psi ²
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 ¹
Flushometer Tank Water Closets	1.6 gallons/flush	1.28 gallons/flush ¹
Flushometer Valve Water Closets	1.6 gallons/flush	1.28 gallons/flush ¹
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1.28 gallons/flush ¹
Urinals	1.0 gallons/flush	.5 gallons/flush

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

² 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.

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

⁴ 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
[DSA-SS]**

REQUIRED STANDARDS	
...	...
Residential bathroom lavatory sink faucets: Maximum flow rate – 1.5 gpm (5.7 l/min) ¹	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>

5.303.6 Plumbing fixtures and fittings. [DSA-SS] . . .

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

CHAPTER 5

NONRESIDENTIAL MANDATORY MEASURES

DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

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5.402.1 Definitions [DSA-SS] . . .

**SECTION 5.407
WATER RESISTANCE AND MOISTURE MANAGEMENT**

5.407.1 Weather protection. [DSA-SS] . . .

5.407.2 Moisture control. [DSA-SS] . . .

**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. [DSA-SS] 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 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.

Exception [DSA-SS]: ~~Jobsites in areas where there is no mixed construction and demolition debris (C&D) processor or recycling facilities within a feasible haul distance shall meet the requirements as follows:~~

1. ~~The enforcement agency having jurisdiction shall at its discretion, enforce the waste management plan and make exceptions as deemed necessary.~~

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).

. . .

5.408.2.2 Isolated jobsites. [DSA-SS] 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.~~

**SECTION 5.410
BUILDING MAINTENANCE AND OPERATIONS**

5.410.1 Recycling by occupants. [DSA-SS] . . .

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

**CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES**

DIVISION 5.5 ENVIRONMENTAL QUALITY

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**SECTION 5.502
DEFINITIONS**

5.502.1 Definitions [DSA-SS] . . .

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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.

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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_{eq}). 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**

5.504.3 Covering of duct openings and protection of mechanical equipment during construction. [DSA-SS] 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.

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5.504.4.1 Adhesives, sealants, and caulks. [DSA-SS] . . .

**TABLE 5.504.4.1
ADHESIVE VOC LIMIT
[DSA]**

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**TABLE 5.504.4.2
SEALANT VOC LIMIT
[DSA]**

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5.504.4.3 Paints and coatings. [DSA-SS] . . .

**TABLE 5.504.4.3
VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS
[DSA]**

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5.504.4.4 Carpet systems. [DSA-SS] 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.

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5.504.4.5 Composite wood products. [DSA-SS] 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. . . .

**TABLE 5.504.4.5
FORMALDEHYDE LIMITS
[DSA]**

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5.504.4.6 Resilient flooring systems. [DSA-SS] 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.) .

~~[DSA-SS] Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.~~

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1. ~~[DSA-SS] Products certified under the FloorScore program may be found at: http://www.rfci.com/int_FS_ProdCert.htm.~~

...

5.504.5.3 Filters. [DSA-SS] 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.

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**SECTION 5.505
INDOOR MOISTURE CONTROL**

5.505.1 Indoor moisture control. [DSA-SS] . . .

**SECTION 5.506
INDOOR AIR QUALITY**

5.506.1 Outside air delivery. [DSA-SS] 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.

**SECTION 5.508
OUTDOOR AIR QUALITY**

5.508.1 Ozone depletion and greenhouse gas reductions. [DSA-SS] . . .

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

**CHAPTER 6
REFERENCED ORGANIZATIONS AND STANDARDS
[DSA-SS]**

**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>
...		
...
ASTM ASTM International 100 Barr Harbor Drive West Conshohocken, PA 19428-2859 www.astm.org	C 33 C 150 C 595 C 618 C 989 C 1157 C 1240 C1371-98 C 1549 C 1602 C 1697 E 90 E 408-74(2002) E 413 E 1332	A5.405.5.3.2 A5.405.5.1 A5.405.5.1 A5.405.5.2.1 A5.405.5.2.1 A5.405.5.1 A5.405.5.2.1 A4.205.1, 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

	E 1333-96 (2002) E 1903-97 E-1918 E 1980-01	Table 4.504.5 & 5.504.4.5 A5.103.4 A5.106.11.1 A4.106.5.3, A5.106.11.2.3
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Notation:
 Authority – Education Code Sections 17280--17317 and 81130--81147.
 Reference – Education Code Sections 17310 and 81142.

**CHAPTER 7
 REFERENCED ORGANIZATIONS AND STANDARDS
 [DSA-SS]**

**CHAPTER 8
 COMPLIANCE FORMS AND WORKSHEETS
 [DSA-SS]**

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[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.

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

BASELINE WATER USE CALCULATION TABLE									
FIXTURE TYPE	FLOW RATE ² (gpm)		DURATION		DAILY USES		OCCUPANTS ^{3,4,1,2}		GALLONS PER DAY
Showerheads	2.5	X	5 min.	X	1	X	2	=	
...									
Kitchen faucets	2.2	X	4 min.		1		2		
...									
Gravity tank type Water Closets	1.6	X	1 flush	X	1 male ^{4,3} 3 female	X		=	
Flushometer Tank Water Closets	1.6	X	1 flush	X	1 male ^{4,3} 3 female	X		=	
Flushometer Valve Water Closets	1.6	X	1 flush	X	1 male ^{4,3} 3 female	X		=	
Electromechanical Hydraulic Water Closets	1.6	X	1 flush	X	1 male ^{4,3} 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.

31. 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.
 - (a) Shower use by occupants depends on the type of use of a building or portion of a building, e.g., total occupant load for a health club, but only a fraction of the occupants in an office building as determined by the anticipated number of users.
 - (b) Nonresidential kitchen faucet use is determined by the occupant load of the area served by the fixture.
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) ^{2,1}		DURATION		DAILY USES		OCCUPANTS ^{3,4,2,3}		GALLONS PER DAY
Showerheads		X	5 min.	X	1	X	3	=	
...									
Kitchen faucets	2.2	X	4 min.		1		3		
...									
Gravity tank type Water Closets		X	1 flush	X	1 male ⁴⁵ 3 female	X		=	
HET ⁵⁴ High Efficiency Toilet	1.28	X	1 flush	X	1 male ⁴⁵ 3 female	X		=	
Flushometer Tank Water Closets		X	1 flush	X	1 male ⁴⁵ 3 female	X		=	
Flushometer Valve Water Closets		X	1 flush	X	1 male ⁴⁵ 3 female	X		=	
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male ⁴⁵ 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.
 - (a) Shower use by occupants depends on the type of use of a building or portion of a building, e.g., total occupant load for a health club, but only a fraction of the occupants in an office building as determined by the anticipated number of users.
 - (b) Nonresidential kitchen faucet use is determined by the occupant load of the area served by the fixture.
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) ^{2,1}		DURATION		DAILY USES		OCCUPANTS ^{3,4,2,3}		GALLONS PER DAY
Showerheads		X	5 min.	X	1	X	3	=	
...									
Kitchen faucets	2.2	X	4 min.		1		3		
...									
Gravity tank type Water Closets		X	1 flush	X	1 male ^{4b} 3 female	X			
HET ⁵⁴ High Efficiency Toilet	1.28	X	1 flush	X	1 male ^{4b} 3 female	X			
Flushometer Tank Water Closets		X	1 flush	X	1 male ^{4b} 3 female	X			
Flushometer Valve Water Closets		X	1 flush	X	1 male ^{4b} 3 female	X			
Electromechanical Hydraulic Water Closets		X	1 flush	X	1 male ^{4b} 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.
 - (a) Shower use by occupants depends on the type of use of a building or portion of a building, e.g., total occupant load for a health club, but only a fraction of the occupants in an office building as determined by the anticipated number of users.
 - (b) Nonresidential kitchen faucet use is determined by the occupant load of the area served by the fixture.
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.

Project Name:	_____
Job Number:	_____
Project Manager:	_____
Waste Hauling Company:	_____

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. [DSA-SS] 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 A5.106
SITE DEVELOPMENT**

A5.106.4 Bicycle parking and changing rooms. [DSA-SS] 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 . . .

**TABLE A5.106.4.3
[DSA-SS]**

...

A5.106.5.1 Designated parking for fuel efficient vehicles. Tier 1 [BSC] Designated parking for fuel efficient vehicles (10%). [DSA-SS] 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. [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. [DSA-SS] 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/
VEHICLE VANPOOL/EV”**

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.

A5.106.5.1.4 Vehicle designations. [DSA-SS] . . .

A5.106.5.3 Electric vehicle charging. [DSA-SS] . . .

A5.106.5.3.1 Electric vehicle supply wiring. For each space required in Table A5.106.5.3.1, provide panel capacity and dedicated conduit for one 120 VAC 20 amp and one 208/240 amp, grounded AC outlet or panel capacity and conduit installed for future outlet circuit terminating within 5 feet of the midline of each parking space.

...

**TABLE A5.106.5.3.1
[DSA]**

...

A5.106.6 Parking capacity. [DSA-SS] . . .

A5.106.7 Exterior wall shading. [DSA-SS] 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.

1, **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 .

A5.106.9 Building orientation. [DSA-SS] 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. [DSA-SS] 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). [DSA-SS] In Public School and Community College buildings, solar shade structures may be used in lieu of trees to provide required shade.
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. [DSA-SS] 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)~~3~~ 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 or by email at Title24@energy.state.ca.us.

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

[DSA-SS]

Roof Slope	Roof Weight	Climate Zone	Minimum 3-year Aged Solar Reflectance	Thermal Emittance	SRI
≤ 2 : 12	N.A	13 & 2- 15	0.55	0.75	64
> 2 : 12	< 5 lbs./ft ²	40 2- 16	0.20	0.75	16
	≥ 5 lbs./ft ²	1-16	0.15	0.75	10

**Table A5.106.11.2.2
Tier 2**

[DSA-SS]

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 ²	2, 4, 6 - 15 <u>2-</u> 16	0.23	0.85	20 <u>23</u>
	≥ 5 lbs./ft ²	<u>1-16</u>	<u>0.30</u>	<u>0.85</u>	<u>30</u>

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

APPENDIX A5

NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.2 ENERGY EFFICIENCY

...

SECTION A5.202 DEFINITIONS

A5.202.1 Definitions. [DSA-SS] ...

~~**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. [DSA-SS]** 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 CO₂ emissions, and compare it them to the standard or "budget" building.~~

~~**Note:** 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 A45.6.~~

~~**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 A45.6.~~

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.

...

SECTION A5.204 PRESCRIPTIVE APPROACH

A5.204.1 ENERGY STAR equipment and appliances. [DSA-SS] ...

A5.204.2 Energy monitoring. [DSA-SS] ...

SECTION A5.211 RENEWABLE ENERGY

A5.211.1 On-site renewable energy. [DSA-SS] ...

A5.211.3 Green power. [DSA-SS] ...

~~**A5.211.4 Pre-wiring for future rooftop solar. [DSA-SS]** 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. [DSA-SS] 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 – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

APPENDIX A5

NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.3 WATER EFFICIENCY AND CONSERVATION

**SECTION A5.303
INDOOR WATER USE**

A5.302.1 Definitions [DSA-SS] . . .

A5.303.2.3.1 Tier 1 – 30% Savings [BSC] 30 % savings. [DSA-SS] 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 ^{4,3}
[DSA-SS]**

FIXTURE TYPE	<u>BASELINE FLOW RATE</u> ²	DURATION	DAILY USES	OCCUPANTS ^{3,2}
Showerheads	2.5 gpm @ 80 psi	8 5 min.	1	X ²
Lavatory faucets nonresidential	2.2 .5 gpm @ 60 psi	.25 min.	3	X
Kitchen faucets	2.6 gpm @ 60 psi	4 min.	1	X ²
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 ¹ 3 female	X
Gravity tank type water closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
Flushometer tank water closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X

Flushometer valve water closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
Electromechanical hydraulic water closets	1.6 gallons/flush	1 flush	1 male ¹ 3 female	X
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. Refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
 - (a) Shower use by occupants depends on the type of use of a building or portion of a building, e.g., total occupant load for a health club, but only a fraction of the occupants in an office building as determined by the anticipated number of users.
 - (b) Nonresidential kitchen faucet use is determined by the occupant load of the area served by the fixture.
4. Use worksheet WS-1 to calculate base line water use.

**Table A5.303.2.3.1
FIXTURE FLOW RATES**

[DSA-SS]

FIXTURE TYPE	BASELINE FLOW-RATE²	MAXIMUM FLOW RATE AT ≥ 30% REDUCTION
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 ²
Kitchen Faucets	2.2 gpm @ 60 psi	1.6 5 gpm @ 60 psi ²
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 ¹
Flushometer Tank Water Closets	1.6 gallons/flush	1.12 gallons/flush ¹
Flushometer Valve Water Closets	1.6 gallons/flush	1.12 gallons/flush ¹
Electromechanical Hydraulic Water Closets	1.6 gallons/flush	1.12 gallons/flush ¹
Urinals	1.0 gallons/flush	.5 gallons/flush

¹ 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.
² See Table 5.503.2.3 for additional notes and references.

...

A5.303.3 Appliances and fixtures for commercial application. [DSA-SS] 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**

[DSA-SS]

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

A5.304.1.1 Water budget. [DSA-SS] A water budget shall be developed for landscape irrigation use . . .

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A5.304.4.4 Potable water reduction. [DSA-SS] Provide water efficient landscape irrigation design that reduces the use of potable water beyond the initial requirements for plant installation and establishment by 50%.

...

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

APPENDIX A5

NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

...

SECTION A5.402 DEFINITIONS

A5.402.1 Definitions [DSA-SS] . . .

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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 A5.404 EFFICIENT FRAMING TECHNIQUES

A5.404.1 Wood framing. [DSA-SS] . . .

SECTION A5.405 MATERIAL SOURCES

...

A5.405.4 Recycled content, [BSC, DSA-SS] 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.

Comply with the requirements for recycled content in Section A5.405.4.1

A5.405.4.2 Determination of recycled content value (RCV_M). ~~[BSC, DSA-SS]~~ The recycled content of a material assembly shall be determined by weight the fractional value of the weight is then multiplied by the total estimated cost of the material assembly

A5.405.4.1 Recycled content. Use materials, equivalent in performance to virgin materials with a total (combined) recycled content value (RCV) of:

Tier 1. The RCV shall not be less than 10 percent of the total material cost of the project.
Required Total RCV (dollars) = Total Material Cost (dollars) x 10 percent **(Equation A5. 4-1)**

Tier 2. The RCV shall not be less than 15 percent of the total material cost of the project.
Required Total RCV (dollars) = Total Material Cost (dollars) x 15 percent **(Equation A5. 4-2)**

Notes:

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

A5.405.4.1.1 Total material cost. Total material cost is the total estimated or actual cost of materials and assembly products used in the project. The required total recycled content value for the project (in dollars) shall be determined by Equation A5.4-1 or Equation A5.4-2.

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

1. Simplified method. To obtain the total cost of the project multiply the square footage of the structure by the square foot valuation established by the enforcing agency. The total material cost is 45 percent of the total cost of the project. Use Equations A5.4-3A or A5.4-3B to determine total material costs using the simplified method.

Total material costs =

Project square footage x square foot valuation x 45 percent **(Equation A5.4-3A)**

Total estimated or actual cost of project x 45 percent **(Equation A5.4-3B)**

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

A4.405.4.1.2 Determination of total recycled content value (RCV). Total RCV may be determined either by dollars or percentage as noted below.

1. Total recycled content value for the project (in dollars). This is the sum of the recycled content value of the materials and/or assemblies considered and shall be determined by Equation A5.4-4. The result of this calculation may be directly compared to Equations A5.4-1 and A5.4-2 to determine compliance with Tier 1 or Tier 2 prerequisites.

Total Recycled Content Value (dollars) = (RCV_M + RCV_A) **(Equation A5.4-4)**

2. Total recycled content value for the project (by percentage). This is expressed as a percentage of the total material cost and shall be determined by Equation A5.4-4 and Equation A5.4-5. The result of this calculation may be directly compared for compliance with Tier 1 (10 percent) or Tier 2 (15 percent) prerequisites.

Total Recycled Content Value (percent) =
[Total Recycled Content Value (dollars) ÷ Total Material Cost (dollars)] x 100 **(Equation A5. 4-5)**

A5.405.4.1.3 Determination of recycled content value of materials (RCV_M). The recycled content value of each material (RCV_M) is calculated by multiplying the cost of material, as defined by the recycled content. See Equations A5.4-6 and A5.4-7.

RCV_M (dollars) = Material cost (dollars) x RC_M (percent) **(Equation A5. 4-6)**

$$RC_M (\text{percent}) = \text{Post-consumer content percentage} + (\frac{1}{2}) \text{Pre-consumer content percentage}$$

(Equation A5.4-7)

Notes:

1. If the post-consumer and pre-consumer recycled content is provided in pounds, Equation A5.4-7 may be used, but the final result (in pounds) must be multiplied by 100 to show RC_M as a percentage.
2. If the manufacturer reports total recycled content of a material, in lieu of separately reporting pre-consumer and post-consumer values, the reported value shall be inserted directly into Equation A5.4-6.

A5.405.4.1.4. Determination of recycled content value of assemblies – (RCV_A).

Recycled content value of assemblies is calculated by multiplying the total cost of assembly by the total recycled content of assembly (RC_A), and shall be determined by Equation A5.4-8.

$$RCV_A (\text{dollars}) = \text{Assembly cost (dollars)} \times \text{Total } RC_A (\text{percent})$$

(Equation A5.4-8)

If not provided by the manufacturer, Total RC_A (percent) is the sum (Σ) of the Proportional Recycled Content (PRC_M) of each material in the assembly. RC_A shall be determined by Equation A4.4-9.

$$RC_A = \Sigma PRC_M$$

(Equation A5.4-9)

PRC_M of each material may be calculated by one of two methods using the following formulas:

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

$$PRC_M (\text{percent}) = \text{Weight of material (percent)} \times RC_M (\text{percent})$$

Equation A5.4-10

$$\text{Weight of material (percent)} = [\text{Weight of material (lbs)} \div \text{Weight of assembly (lbs)}] \times 100$$

(Equation A5.4-11)

$$RC_M (\text{percent}) = \text{Post-consumer content percentage} + (\frac{1}{2}) \text{Pre-consumer content percentage}$$

(See Equation A5.4-7)

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

$$PRC_M (\text{percent}) = [RC_M (\text{lbs}) \div \text{Weight of material (lbs)}] \times 100$$

(Equation A5.4-12)

$$RC_M (\text{lbs}) = \text{Post-consumer content (lbs)} + (\frac{1}{2}) \text{Pre-consumer content (lbs)}$$

(Equation A5.4-13)

NOTE: If the manufacturer reports total recycled content of a material, in lieu of separately reporting pre-consumer and post-consumer values, the reported value shall be inserted directly into Equation A5.4-10 and Equation A5.4-12, respectively.

A5.405.4.1.5. Alternate method for concrete. When Supplementary Cementitious Materials (SCMs), such as fly ash or ground blast furnace slag cement, are used in concrete, an alternate method of calculating and reporting recycled content in concrete products shall be permitted. When determining the recycled content value, the percent recycled content shall be multiplied by the cost of the cementitious materials only, not the total cost of the concrete.

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**SECTION A5.406
ENHANCED DURABILITY AND REDUCED MAINTENANCE**

A5.406.1 Choice of materials. [BSC, DSA-SS] Compared to other products in a given product category, choose materials proven to be characterized by one or more of the following:

A5.406.1.1 Service life. [BSC, DSA-SS] Select materials for longevity and minimal deterioration under conditions of use.

A5.406.1.1.1 Service life [DSA-SS]. Use materials, equivalent in performance to virgin materials, with post consumer or pre-consumer recycled content value (RVC) for a minimum of 10 percent of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.

A5.406.1.3 Recyclability. [BSC, DSA-SS] Select materials that can be re-used or recycled at the end of their service life in the project.

**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. [BSC] Enhanced construction waste reduction (80%) [DSA-SS]** Divert to recycle or salvage at least 80% of non-hazardous construction 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.

~~**A5.408.3.2 Enhanced construction waste reduction. [DSA-SS]** Divert to recycle or salvage non-hazardous construction and demolition debris generated at the site for at least an 80% reduction.~~

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.

SECTION A5.409 LIFE CYCLE ASSESSMENT

A4.409.1 General. [BSC] Life Cycle Assessment (LCA). [DSA-SS] 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. [DSA-SS] Conduct a whole building life assessment, including operating energy, showing that the building project achieves at least a 10 percent improvement for at least three of the impacts listed in Section A5.409.2.2, one of which shall be climate change, compared to a reference building of similar size, function, complexity and operating energy performance, and meeting the 2010 California Energy Code at a minimum.

A5.409.2.1 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.

A5.409.2.2 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. [DSA-SS] ~~If whole building analysis of the project is not elected, 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:

1. ~~Software for calculating life cycle assessments costs for materials assemblies and materials may be found at:~~ 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; at the American Center for Life Cycle Assessment: www.lcacenter.org; at U.S. EPA Life Cycle Assessment Research: www.epa.gov/nrmrl/lcaccess/index.html; and at U.S. EPA Environmentally Preferable Products, www.epa.gov/epp.

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SECTION A5.410 BUILDING MAINTENANCE AND OPERATION

A5.410.3 Commissioning. [DSA-SS] 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 representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel trained with experience on projects of comparable size and complexity, certified in commissioning by a nationally recognized organization. Commissioning requirements shall include as a minimum:

1. Owner's or Owner representative's project requirements.
2. Basis of design
3. Commissioning measures shown in the construction documents
4. Commissioning plan
5. Functional performance testing
6. ~~Post-Construction d~~Documentation & training
7. Commissioning report

Exceptions:

1. Dry storage warehouses of any size
2. Areas under 10,000 square feet used for offices or other conditioned accessory spaces within dry storage warehouses
3. Tenant improvements under 10,000 square feet as described in Section 303.1.1.

All building systems and components covered by Title 24, Part 6, as well as process equipment and controls, and renewable energy systems shall be included in the scope of the Commissioning Requirements.

A5.410.3.1 Owner's or Owner representative's Project Requirements (OPR). The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. ~~At a minimum,~~†This documentation shall include the following:

1. Environmental and sustainability goals
2. Energy efficiency goals
3. Indoor environmental quality requirements
4. Project program, including facility functions and hours of operation, and need for after hours operation
5. Equipment and systems expectations
6. Building occupant and operation and maintenance (O&M) personnel expectations

A5.410.3.2 Basis of Design (BOD). A written explanation of how the design of the building systems meets the ~~Owner's Project Requirements- OPR~~ shall be completed at the design phase of the building project, and updated as necessary during the design and construction phases. ~~At a minimum,~~†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

A5.410.3.3 Commissioning plan. Prior to permit issuance a 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 ~~at a minimum:~~

1. General project information

2. Commissioning goals
3. Systems to be commissioned. Plans to test systems and components shall include at a minimum:
 - a. ~~An detailed~~ 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 & responsibilities. Plans for the completion of commissioning ~~requirements listed in A5.410.4.4 through A5.410.4.6~~ shall be included.

A5.410.3.4 Functional performance testing. Functional performance tests shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized and include any readings and adjustments made.

A5.410.3.5 Documentation and training. A Systems Manual and Systems Operations Training are required, including Occupational Safety and Health Act (OSHA) requirements in California Code of Regulations (CCR), Title 8, Section 5142, and other related regulations.

A5.410.3.5.1 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. ~~At a minimum, the~~ Systems Manual shall include the following:

1. Site information, including facility description, history and current requirements
2. Site contact information
3. Basic operations & 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

A5.410.3.5.2 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, as a minimum, the following:

1. System/equipment overview (what it is, what it does and what other systems and/or equipment it interfaces ~~with~~)
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

A5.410.3.6 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.

A5.410.5 Testing and adjusting. [DSA-SS] Testing and adjusting of systems shall be required for buildings less than 10,000 square feet.

A5.410.5.1 Reserved.

A5.410.5.2 Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting and balancing shall include the following 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

A5.410.5.3 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.

A5.410.5.3.1 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 enforcing agency.

A5.410.5.4 Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.

A5.410.5.5 Operation and maintenance (O & M) manual. Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection. O & M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142 and other related regulations.

Notes:

1. ~~Software for calculating life cycle costs for materials and assemblies may be found at: The Athena Institute web site;
The NIST BEES web site;
Life Cycle assessment may also be done in accordance with ISO Standard 14044~~
2. ~~More information on life cycle assessment may be found at the Sustainable Products Purchasers Coalition; at the American Center for Life Cycle Assessment; at U.S. EPA Life Cycle Assessment Research; and at U.S. EPA Environmentally Preferable Products.~~

A5.410.4.1 Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

APPENDIX A5

NONRESIDENTIAL VOLUNTARY MEASURES

DIVISION A5.5 ENVIRONMENTAL QUALITY

**SECTION A5.502
DEFINITIONS**

A5.502.1 Definitions [DSA-SS]. . . .

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).

. . .

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).

. . .

**SECTION A5.504
POLLUTANT CONTROL**

A5.504.1 Indoor air quality (IAQ) during construction. [DSA-SS] . . .

. . .

A5.504.2 IAQ Post-construction. [DSA-SS] 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 ft³/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.

...

A5.504.4.5.1 Early compliance with formaldehyde limits, Tier 1. [BSC] Early compliance with formaldehyde limits. [DSA-SS] ~~Where complying composite wood product is readily available for non-residential occupancies, m~~ 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).~~

[DSA-SS] ~~Where complying composite wood product is readily available for non-residential occupancies, meet requirements before the compliance dates indicated in Table A5.504.8.5, or use composite wood products made with either CARB approved no-added formaldehyde (NAF) resins or CARB approved ultra-low emitting formaldehyde (ULEF) resins.~~

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

A5.504.4.7 Resilient flooring systems, Tier 1 [BSC] Resilient flooring systems. [DSA-SS] 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 [BSC] Thermal insulation. [DSA-SS] Comply with the following standards:

1. Chapter 12-13 in Title 24, Part 12, the California Referenced Standards Code,
2. ~~and with t~~ The VOC-emission limits defined in the 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. [BSC] Thermal insulation, No-Added Formaldehyde. [DSA-SS] 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.

...

A5.504.4.9 Acoustical ceilings and wall panels. [DSA-SS] 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.~~

...

Note: [DSA-SS, OSHPD 1] Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission

A5.504.5 Hazardous particulates and chemical pollutants. [DSA-SS] ...

**TABLE A5.504.8.5
FORMALDEHYDE LIMITS
[DSA]**

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A5.507.1 Lighting and thermal comfort controls. [DSA-SS] . . .

A5.507.2 Daylight. [DSA-SS] . . .

A5.507.3 Views. [DSA-SS] . . .

A5.507.5 Acoustical control. [DSA-SS] . . .

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.

Division A5.7- NONRESIDENTIAL CHECKLISTS

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
DIVISION 5.1 – PLANNING AND DESIGN		
SITE DEVELOPMENT		
A5.106.4 Bicycle parking and changing rooms. Comply with Sections 5.106.4.1 through 5.106.4.3; or meet local ordinance or the University of California Policy on Sustainable Practices, whichever is stricter.		<input checked="" type="checkbox"/>
A5.106.4.1 Short term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 yards of the visitors' entrance, readily visible to passers by, for 5% of visitor motorized vehicle parking capacity, with a minimum of one two bike capacity rack.		<input checked="" type="checkbox"/>
A5.106.4.2 Long term bicycle parking. For buildings with over 10 tenant occupants, provide secure bicycle parking for 5% of tenant-occupant motorized vehicle parking capacity, with a minimum of one space. For public schools and community colleges provide secure bicycle parking for 15% of occupants (students, teachers, and staff). Acceptable parking facilities shall be convenient from the street and may include, but not be limited to: 1. Covered, lockable enclosures with permanently anchored racks for bicycles; 2. Lockable bicycle rooms with permanently anchored racks; and 3. Lockable, permanently anchored bicycle lockers.		<input checked="" type="checkbox"/>
A5.106.4.3.1 Changing rooms. For buildings with over 10 tenant occupants, provide changing/shower facilities for tenant-occupants only in accordance with Table A5.106.4.3, or document arrangements with nearby changing/shower facilities. For public schools and community colleges, provide changing/shower facilities for the "number of administrative/teaching staff" equal to the "number of tenant occupants" shown in Table 5.106.4.3. TABLE A5.106.4.3		<input checked="" type="checkbox"/>
A5.106.5.1.1 Designated parking for fuel efficient vehicles. 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 10% of Total Spaces		<input checked="" type="checkbox"/>
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 VEHICLE"		<input checked="" type="checkbox"/>
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.		<input checked="" type="checkbox"/>
A5.106.5.3 Electric vehicle charging. Provide facilities meeting Section 406.7 (Electric Vehicle) of the <i>California Building Code</i> and as follows:		<input checked="" type="checkbox"/>
A5.106.5.3.1 Electric vehicle supply wiring. For each space required in Table A406.1.5.2, provide one 120 VAC 20 amp and one 208/240 V 40 amp, grounded AC outlets or panel capacity and conduit installed for future outlets. TABLE A5.106.5.3.1		<input checked="" type="checkbox"/>
A5.106.6 Parking capacity. Design parking capacity to meet but not exceed minimum local zoning requirements.		<input checked="" type="checkbox"/>

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
<p>A5.106.6.1 Reduce parking capacity. With the approval of the enforcement authority, employ strategies to reduce on-site parking area by</p> <ol style="list-style-type: none"> 1. Use of on-street parking or compact spaces, illustrated on the site plan, or 2. Implementation and documentation of programs that encourage occupants to carpool, ride share or use alternate transportation. Strategies for programs may be obtained from local TMAs. 		<input checked="" type="checkbox"/>
<p>A5.106.7 Exterior wall shading. Meet requirements in the current edition of the California Energy Code and select one of the following for wall surfaces:</p> <ol style="list-style-type: none"> 1. Provide vegetative or man-made shading devices for east, south, and west facing walls with windows. 2. Use wall surfacing with minimum SRI 25 (aged), for 75% of opaque wall areas. 		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
<p>5.106.8 Light pollution reduction. Comply with lighting power requirements in the California Energy Code, CCR, Part 6, and design interior and exterior lighting such that zero direct beam illumination leaves the building site. Meet or exceed exterior light levels and uniformity ratios for lighting zones 1-4 as defined in Chapter 10 of the California Administrative Code, CCR, Part 1, using the following strategies:</p> <ol style="list-style-type: none"> 1. Shield all exterior luminaires or provide cutoff luminaires per Section 132 (b) of the California Energy Code. 2. Contain interior lighting within each source. 3. Allow no more than .01 horizontal lumen foot candles to escape 15 feet beyond the site boundary. 4. Automatically control exterior lighting dusk to dawn to turn off or lower light levels during inactive periods. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Part 2, Chapter 12, Section 1205.6 for campus lighting requirements for parking facilities and primary walkways. 2. Emergency lighting and lighting required for nighttime security. 	<input checked="" type="checkbox"/>	
<p>A5.106.9 Building orientation. Locate and orient the building as follows:</p> <ol style="list-style-type: none"> 1. When site and location permit, orient the building with the long sides facing 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. 		<input checked="" type="checkbox"/>
<p>A5.106.9.1 Building orientation and shading. Locate, orient and shade the building as follows:</p> <ol style="list-style-type: none"> 1. Provide exterior shade for south-facing windows during the peak cooling season. In Public School and Community College buildings, shade may be provided by trees, solar shade structures, or other alternate methods. 		<input checked="" type="checkbox"/>
<p>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.</p>	<input checked="" type="checkbox"/>	
<p>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.</p>		<input checked="" type="checkbox"/>
<p>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.</p> <ol style="list-style-type: none"> 1. Provide shade (mature within 5 years of occupancy). In Public School and Community College buildings, solar shade structures may be used in lieu of trees to provide required shade. 2. Use light colored/ high albedo materials. 3. Use open grid pavement system. 		<input checked="" type="checkbox"/>
<p>A5.106.11.2 Cool roof. A5.106.11.2 Cool Roof. Use roofing materials having solar reflectance, thermal emittance or Solar Reflectance Index (SRI)³ equal to or greater than the values shown in: Table A5.106.11.2.1</p>		<input checked="" type="checkbox"/>
DIVISION 5.2 – ENERGY EFFICIENCY		
GENERAL		
<p>5.201.1 Scope. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.</p>	<input checked="" type="checkbox"/>	
<p>A5.203.1.1 Energy efficiency – 15% above Title 24. Exceed California Energy Code requirements, based on the 2008 Energy Efficiency Standards, by 15% and meet the requirements of Division A45.6.</p>		<input checked="" type="checkbox"/>

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
A5.203.1.2 Energy efficiency – 30% above Title 24. Exceed California Energy Code requirements, based on the 2008 Energy Efficiency Standards, by 30% and meet the requirements of Division A45.6.		<input checked="" type="checkbox"/>
PRESCRIPTIVE MEASURES		
A5.204.1 ENERGY STAR equipment and appliances. All equipment and appliances provided by the builder shall be ENERGY STAR-labeled if ENERGY STAR is applicable to that equipment or appliance.		<input checked="" type="checkbox"/>
A5.204.2 Energy monitoring. Provide submetering or equivalent combinations of sensor measurements and thermodynamic calculations, if appropriate, to record energy use data for each major energy system in the building, including chillers, heat pumps, packaged AC systems, fans, pumps, cooling towers, boilers and other heating systems, lighting systems and process loads. This energy use data, once collected, shall be stored within a data management system.		<input checked="" type="checkbox"/>
A5.204.2.1 Data storage. The data management system must be capable of electronically storing energy data and creating user reports showing hourly, daily, monthly and annual energy consumption for each major energy system. Hourly data shall be retained a minimum of 30 days, daily data shall be retained a minimum of 6 months and monthly data shall be retained a minimum of 2 years.		<input checked="" type="checkbox"/>
A5.204.2.2 Data access. Hourly energy use data shall be accessible through a central data management system and must be available daily.		<input checked="" type="checkbox"/>
RENEWABLE ENERGY		
A5.211.1 On-site renewable energy. Use on-site renewable energy sources such as solar, wind, geothermal, low impact hydro, biomass and bio-gas for at least 1 percent of the electric power calculated as the product of the building service voltage and the amperage specified by the electrical service overcurrent protection device rating or 1kW (whichever is greater), in addition to the electrical demand required to meet 1 percent of the natural gas and propane use. The building project's electrical service overcurrent protection device rating shall be calculated in accordance with the 2007 California Electrical Code. Natural gas or propane use is calculated in accordance with the 2007 California Plumbing Code.		<input checked="" type="checkbox"/>
A5.211.1.2 Grid neutral. Using the proposed annual electrical energy budget (kwh) as set forth by the Title 24, Part 6 of the California energy Code, and adding the additional annual energy consumption estimated for the appliances and equipment not covered by Title 24, Part 6 (e.g. kitchen and laundry equipment and appliances, swimming pool heaters and circulation pumps, industrial and art equipment, computers, etc.) calculate the site's annual electrical production and consumption ratio by dividing the proposed annual renewable electrical energy production (kwh) by the proposed annual electrical energy budget (kwh). The estimated plug loads shall be included in the annual electrical energy budget (kwh). Exceptions: <ol style="list-style-type: none"> Existing buildings with one year of occupancy or greater shall use actual data of the annual electrical energy consumption of the facilities. Using the data logged for the facilities, calculate the site's annual electrical production and consumption ratio by dividing the proposed annual renewable electrical energy production (kwh) by the actual annual electrical energy consumption (kwh). The annual renewable electrical energy can be renewable energy produce3d off-site on a remote property owned by the applicant. 		<input checked="" type="checkbox"/>
A5.211.2.1 35% Grid neutral. A site's annual electrical production and consumption ratio is equal or greater than 0.35.		<input checked="" type="checkbox"/>
A5.211.2.2 75% Grid neutral. A site's annual electrical production and consumption ratio is equal or greater than 0.75.		<input checked="" type="checkbox"/>
A5.211.2.3 Grid neutral. A site's annual electrical production and consumption ratio is equal or greater than 1.		<input checked="" type="checkbox"/>
A5.211.3 Green power. Using a calculation method approved by the California Energy Commission, calculate the renewable on-site energy system to meet the requirements of Section 511.1, expressed in kW. Factor in net metering, if offered by local utility, on an annual basis.		<input checked="" type="checkbox"/>
A5.211.4 Pre-wiring for future solar. Install conduit from the building roof or eave to a location within the building identified as suitable for future installation of a charge controller (regulator) and inverter.		<input checked="" type="checkbox"/>
A5.211.4.1 Off grid pre-wiring for future solar. If battery storage is anticipated, conduit should run to a location within the building that is stable, weather proof, insulated against very hot and very cold weather, and isolated from occupied		<input checked="" type="checkbox"/>

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
spaces-		
ELEVATORS, ESCALATORS, AND OTHER EQUIPMENT		
A5.212.1 Elevators and escalators. In buildings with more than one elevator or two escalators, provide controls to reduce the energy demand of elevators for part of the day and escalators to reduce speed when no traffic is detected. Document the controls in the project specifications and commissioning plan. In Public School and Community College buildings, locate stairs conveniently to encourage their use in lieu of elevators or escalators.		<input checked="" type="checkbox"/>
A5.212.1.1 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, <i>California Building Code</i> .		<input checked="" type="checkbox"/>
DIVISION 5.3 – WATER EFFICIENCY AND CONSERVATION		
INDOOR WATER USE		
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 fitting 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. Each plumbing fixture and fitting shall meet the 20% reduced flow rate specified in Table 5.303.2, or 2. A calculation demonstrating a 20% reduction in the building “water use baseline” as established in Table 5.303.1 shall be provided. TABLE 5.301.1 – INDOOR WATER USE BASELINE TABLE 5.303.2 – FIXTURE FLOW RATES	<input checked="" type="checkbox"/>	
A5.303.2.1 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 fitting 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. Each plumbing fixture and fitting shall meet the 30% reduced flow rate specified in Table A5.303.2.2, or 2. A calculation demonstrating a 30% reduction in the building “water use baseline” as established in Table A5.303.2.1 shall be provided. TABLE A5.303.2.1 – WATER USE BASELINE ⁵ TABLE A5.303.2.2 – FIXTURE FLOW RATE		<input checked="" type="checkbox"/>
A5.303.3 Appliances. 1. Clothes washer shall have a maximum water factor (WF) that will reduce the use of water by 40 percent below the California Energy Commission’s 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 per cycle. b. Commercial – refer to Table A5.303.3. TABLE A5.303.3 – COMMERCIAL DISHWASHER WATER USE 3. Ice makers shall be air cooled. 4. Food steamers shall be connection less or boiler less.		<input checked="" type="checkbox"/>
5.303.4 Wastewater reduction. Each building shall reduce by 20% wastewater by one of the following methods: 1. The installation of water conserving fixtures (water closets, urinals) meeting the criteria established in sections 5.303.2 or A5.303.3	<input checked="" type="checkbox"/>	
5.303.6 Plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall meet the standards referenced in Table 5.503.6. TABLE 5.303.6 – STANDARDS FOR PLUMBING FIXTURES AND FIXTURE FITTINGS	<input checked="" type="checkbox"/>	
OUTDOOR WATER USE		
A5.304.1 Water budget. A water budget shall be developed for landscape irrigation use that conforms to the local water efficient landscape ordinance or to the California Department of Water Resources Model Water Efficient Landscape Ordinance where no local ordinance is applicable.		<input checked="" type="checkbox"/>
A5.304.4.4 Potable water reduction. Provide water efficient landscape irrigation design that reduces the use of potable water beyond		<input checked="" type="checkbox"/>

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
<p>the initial requirements for plant installation and establishment by 50%. Calculations for the reduction shall be based on the water budget developed pursuant to section A5.304.1. Methods used to accomplish the requirements of this section must be designed to the requirements of the California Building Standards Code and shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Plant coefficient. 2. Irrigation efficiency and distribution uniformity. 3. Use of captured rainwater. 4. Use of recycled water. 5. Water treated for irrigation purposes and conveyed by a water district or public entity. 		
DIVISION 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY		
EFFICIENT FRAMING SYSTEMS		
<p>A5.404.1 Wood framing. Employ advanced wood framing techniques, or OVE, as recommended by the U.S. Department of Energy's Office of Building Technology, State and Community Programs and as permitted by the enforcing agency.</p>		<input checked="" type="checkbox"/>
MATERIAL SOURCES		
<p>A5.405.4 Recycled content. 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.</p>		<input checked="" type="checkbox"/>
ENHANCED DURABILITY AND REDUCED MAINTENANCE		
<p>A5.406.1.1 Service life. Use materials, equivalent in performance to virgin materials, with postconsumer or preconsumer recycled content value (RCV) for a minimum of 10 percent of the total value, based on estimated cost of materials on the project. Provide documentation as to the respective values.</p>		<input checked="" type="checkbox"/>
<p>A5.406.1.3 Recyclability. Select materials that can be reused or recycled at the end of their service life in the project.</p>		<input checked="" type="checkbox"/>
WATER RESISTANCE AND MOISTURE MANAGEMENT		
<p>5.407.1 Weather protection. Provide a weather resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2 (Weather Protection) and California Energy Code Section 150 (Mandatory Features and Devices), manufacturer's installation instructions, or local ordinance, whichever is more stringent.</p>	<input checked="" type="checkbox"/>	
<p>5.407.2 Moisture control. Employ moisture control measures by the following methods.</p>		
<p>5.407.2.1 Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.</p>	<input checked="" type="checkbox"/>	
<p>5.407.2.2 Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind driven rain to prevent water intrusion into buildings.</p>	<input checked="" type="checkbox"/>	
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING		
<p>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.</p>	<input checked="" type="checkbox"/>	
<p>5.408.2 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan for approval by the enforcement agency that:</p> <ol style="list-style-type: none"> 1. Identifies the materials to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale. 2. Determines if materials will be sorted on-site or mixed. 3. Identifies diversion facilities where material collected will be taken. 4. Specifies that the amount of materials diverted shall be calculated by weight or volume, but not by both. 	<input checked="" type="checkbox"/>	
<p>5.408.2.1 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 5.408.2 items 1 thru 4. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency. Exception. Jobsites in areas where there is no mixed construction and demolition debris (C&D) processor or recycling facilities within a feasible haul distance shall meet the requirements as follows:</p> <ol style="list-style-type: none"> 1. The enforcement agency having jurisdiction shall at its discretion, enforce the waste management plan and make exceptions as deemed necessary. 	<input checked="" type="checkbox"/>	

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>	
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.	<input checked="" type="checkbox"/>	
A5.408.3.2 Enhanced construction waste reduction. Divert to recycle or salvage non-hazardous construction and demolition debris generated at the site for at least an 80% reduction. 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.		<input checked="" type="checkbox"/>
LIFE CYCLE ASSESSMENT		
A5.409.1 Materials and system assemblies. Select materials assemblies based on life cycle assessment of their embodied energy and/or green-house gas emission potentials.		<input checked="" type="checkbox"/>
BUILDING MAINTENANCE AND OPERATION		
5.410.1 Recycling by occupants. 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.	<input checked="" type="checkbox"/>	
A5.410.3 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 project requirements. Commissioning shall be performed in accordance with this section by personnel trained and certified in commissioning by a nationally recognized organization. Commissioning requirements shall include as a minimum: 1. Owner's Project Requirements. 2. Basis of Design. 3. Commissioning measures shown in the construction documents. 4. Commissioning Plan. 5. Functional Performance Testing. 6. Post-Construction Documentation & Training. 7. Commissioning Report. All building systems and components covered by Title 24, Part 6, as well as process equipment and controls, and renewable energy systems shall be included in the scope of the Commissioning Requirements.		<input checked="" type="checkbox"/>
A5.410.3.1 Owner's Project Requirements (OPR). The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. At a minimum, this documentation shall include the following: 1. Environmental and Sustainability Goals. 2. Energy Efficiency Goals. 3. Indoor Environmental Quality Requirements. 4. Equipment and Systems Expectations. 5. Building Occupant and O&M Personnel Expectations.		<input checked="" type="checkbox"/>
A5.410.3.2 Basis of Design (BOD). A written explanation of how the design of the building systems meets the Owner's Project Requirements shall be completed at the design phase of the building project, and updated as necessary during the design and construction phases. At a minimum, 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.		<input checked="" type="checkbox"/>
A5.410.3.3 Commissioning plan. A commissioning plan shall be completed to document how the project will be commissioned and		<input checked="" type="checkbox"/>

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
<p>shall be started during the design phase of the building project. The Commissioning Plan shall include the following at a minimum:</p> <ol style="list-style-type: none"> 1. General Project Information. 2. Commissioning Goals. 3. Systems to be commissioned. Plans to test systems and components shall include at a minimum: <ol style="list-style-type: none"> a. A detailed 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 & Responsibilities — plans for the completion of Commissioning Requirements listed in A5.410.2.4 through A5.410.2.6 shall be included. 		
<p>A5.410.3.4 Functional performance testing. Functional performance tests shall demonstrate the correct installation and operation of each component, system, and system to system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.</p>		<input checked="" type="checkbox"/>
<p>A5.410.3.5 Documentation and training. A Systems Manual and Systems Operations Training are required.</p>		<input checked="" type="checkbox"/>
<p>A5.410.3.5.1 Systems manual. Documentation of the operational aspects of the building shall be completed within the Systems Manual and delivered to the building owner and facilities operator. At a minimum, the Systems Manual shall include the following:</p> <ol style="list-style-type: none"> 1. Site Information, including facility description, history and current requirements. 2. Site Contact Information. 3. Basic Operations & Maintenance, including general site operating procedures, basic troubleshooting, recommended maintenance requirements, site events log 4. Major Systems. 5. Site Equipment Inventory and Maintenance Notes. 		<input checked="" type="checkbox"/>
<p>A5.410.3.5.2 Systems operations training. The training of the appropriate maintenance staff for each equipment type and/or system shall include, as a minimum, the following:</p> <ol style="list-style-type: none"> 1. System/Equipment overview (what it is, what it does and what other systems and/or equipment it interfaces with). 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. 		<input checked="" type="checkbox"/>
<p>A5.410.3.6 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.</p>		<input checked="" type="checkbox"/>
<p>A5.410.4 Testing and adjusting. Testing and adjusting systems shall be required for buildings less than 10,000 square feet.</p>		<input checked="" type="checkbox"/>
<p>A5.410.4.2 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:</p> <ol style="list-style-type: none"> 1. HVAC systems and controls 2. Indoor and outdoor lighting and controls 3. Water heating systems 4. Renewable energy system 		<input checked="" type="checkbox"/>
<p>A5.410.4.3 Procedures. Perform testing and adjusting procedures in accordance with industry best practices and applicable national standards on each system.</p>		<input checked="" type="checkbox"/>
<p>A5.410.4.3.1 HVAC balancing. In addition to testing and adjusting, before a new space conditioning system serving a building or space is operated for normal use, the system shall be balanced in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards (2003); the National Environmental Balancing Bureau Procedural Standards (1983); or Associated Air Balance Council National Standards (1989).</p>		<input checked="" type="checkbox"/>
<p>A5.410.4.4 Reporting.</p>		

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.		<input checked="" type="checkbox"/>
A5.410.4.5 Operation and maintenance manual. Provide the building owner with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection.		<input checked="" type="checkbox"/>
DIVISION 5.6 ENVIRONMENTAL QUALITY		
POLLUTANT CONTROL		
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.		<input checked="" type="checkbox"/>
A5.504.1.2 Additional IAQ measures. Employ additional measures as follows: 1. When using generators to generate temporary power, use generators meeting the requirements of CCR, Title 13, Chapter 9, or local ordinance, whichever is more stringent. 2. Protect on site absorbent materials from moisture. Remove and replace any materials with 3. Store odorous and high VOC emitting materials off site, without packaging, for a sufficient period to allow odors and VOCs to disperse. 4. When possible, once materials are on the jobsite, install odorous and high VOC emitting materials prior to those that are porous or fibrous. 5. Clean oil and dust from ducts prior to use.		<input checked="" type="checkbox"/>
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 air volume must total the equivalent of 14 days of maximum outdoor air.) The air volumes for each period are then calculated and summed, and the flush out continues until the total equals the target air volume.		<input checked="" type="checkbox"/>
5.504.3 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation, or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system.	<input checked="" type="checkbox"/>	
5.504.4.1 Adhesives, sealants, and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards: 1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air quality management	<input checked="" type="checkbox"/>	

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<p>district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene), except for aerosol products as specified in subsection 2, below.</p> <p>2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.</p> <p>TABLE 5.504.4.1 – ADHESIVE AND SEALANT VOC LIMIT¹</p>		
<p>5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3, shall be determined by classifying the coating as a Flat, Nonflat, or Nonflat High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat, or Nonflat High Gloss VOC limit in Table 5.504.4.3 shall apply.</p>	<input checked="" type="checkbox"/>	
<p>5.504.4.3.1 Aerosol paints and coatings. Aerosol paints and coatings shall meet the Product Weighted MIR Limits for ROC in section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.</p> <p>TABLE 5.504.4.3 – VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS^{2,3}</p>	<input checked="" type="checkbox"/>	
<p>5.504.4.4 Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of the following:</p> <ol style="list-style-type: none"> 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). 3. NSF/ANSI 140 at the Gold level 4. Scientific Certifications Systems Sustainable Choice. 	<input checked="" type="checkbox"/>	
<p>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 Green Label program.</p>	<input checked="" type="checkbox"/>	
<p>5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.</p>	<input checked="" type="checkbox"/>	
<p>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.</p> <p>TABLE 5.504.4.5 – FORMALDEHYDE LIMITS¹</p>	<input checked="" type="checkbox"/>	
<p>A5.504.4.5.1 Early compliance with formaldehyde limits. Where complying composite wood product is readily available for non residential occupancies, meet requirements before the compliance dates indicated in Table 5.504.4.5 or use composite wood products made with either CARB approved no added formaldehyde (NAF) resins or CARB approved ultra low emitting formaldehyde (ULEF) resins.</p>		<input checked="" type="checkbox"/>
<p>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 certified under the Resilient Floor Covering Institute (RFCI) Floor Score program. Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.</p>	<input checked="" type="checkbox"/>	
<p>A5.504.4.7 Resilient flooring systems. For 80% of floor area to schedule to receive 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 certified under the FloorScore program of the Resilient Floor Covering Institute.</p>		<input checked="" type="checkbox"/>

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<p>A5.504.4.8 Thermal insulation, Comply with Chapter 12-13 (Standards For Insulating Material) in Title 24, Part 12, the <i>California Referenced Standards Code</i>, and with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List Documentation shall be provided that verifies that finish materials are certified to meet the pollutant emission limits.</p>		<input checked="" type="checkbox"/>
<p>A5.504.4.8.1.1 Thermal insulation, No-Added Formaldehyde. Install No-Added Formaldehyde thermal insulation in addition to meeting the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List.</p>		<input checked="" type="checkbox"/>
<p>A5.504.4.9 Acoustical ceilings and wall panels. Comply with Chapter 8 in Title 24, Part 2, the <i>California Building Code</i>, and with the VOC-emission limits defined in the 2009 Collaborative for High Performances Schools (CHPS) criteria and listed on its Low-emitting Materials List.</p>		<input checked="" type="checkbox"/>
<p>A5.504.5 Hazardous particulates and chemical pollutants. Minimize and control pollutant entry into buildings and cross-contamination of regularly occupied areas.</p>		<input checked="" type="checkbox"/>
<p>A5.504.5.1 Entryway systems. Install permanent entryway systems measuring at least six feet in the primary direction of travel to capture dirt and particulates at entryways directly connected to the outdoors. 1. Qualifying entryways are those that serve as regular entry points for building users. 2. Acceptable entryway systems include, but are not limited to, permanently installed grates, grilles or slotted systems that allow cleaning underneath. 3. Roll out mats are acceptable only when maintained regularly by janitorial contractors as documented in service contract, or by in-house staff as documented by written policies and procedures.</p>		<input checked="" type="checkbox"/>
<p>A5.504.5.2 Isolation of pollutant sources. In rooms where activities produce hazardous fumes or chemicals, such as garages, janitorial or laundry rooms, and copy or printing rooms, exhaust them and isolate them from their adjacent rooms: 1. Exhaust each space with no air recirculation in accordance with ASHRAE 62.1, Table 6-4 to create negative pressure with respect to adjacent spaces with the doors to the room closed. 2. For each space, provide self-closing doors and deck to deck partitions or a hard ceiling. 3. Install low noise, vented range hoods for all cooking appliances and in laboratory or other chemical mixing areas.</p>		<input checked="" type="checkbox"/>
<p>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.</p>	<input checked="" type="checkbox"/>	
<p>A5.504.5.3.1 Filters. In mechanically ventilated buildings, provide regularly student-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 11.</p>		<input checked="" type="checkbox"/>
INDOOR MOISTURE CONTROL		
<p>5.505.1 Indoor moisture control. Buildings shall meet or exceed the provisions of <i>California Building Code</i>, CCR, Title 24, Section 1203 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures not applicable to low-rise residential occupancies, see Section 5.407.2 of this code.</p>	<input checked="" type="checkbox"/>	
INDOOR AIR QUALITY		
<p>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 <i>California Energy Code</i>, CCR, Title 24, Part 6, or the applicable local code, whichever is more stringent, and Chapter 4 of CCR, Title 8.</p>	<input checked="" type="checkbox"/>	
ENVIRONMENTAL COMFORT		
<p>A5.507.1 Lighting and thermal comfort controls. Provide controls in the workplace as described in Sections A5.507.1.1 and A5.507.1.2.</p>		<input checked="" type="checkbox"/>
<p>A5.507.1.1 Single-occupant spaces. Provide individual controls that meet energy use requirements in the 2007 California Energy Code in accordance with Sections A5.507.1.1.1 and A5.507.1.1.2.</p>		<input checked="" type="checkbox"/>
<p>A5.507.1.1.1 Lighting. Provide individual task lighting and/or day lighting controls for at least 90 percent of the building occupants.</p>		<input checked="" type="checkbox"/>
<p>A5.507.1.1.2 Thermal comfort. Provide individual thermal comfort controls for at least 50 percent of the building occupants.</p>		<input checked="" type="checkbox"/>

Application Checklist DSA-SS	Mandatory <input checked="" type="checkbox"/>	Voluntary <input checked="" type="checkbox"/>
<ol style="list-style-type: none"> 1. Occupants shall have control over at least one of the factors of air temperature, radiant temperature, air speed and humidity as described in ASHRAE 55-2004. 2. Occupants inside 20 feet of the plane of and within 10 feet either side of operable windows can substitute windows to control thermal comfort. The areas of operable window must meet the requirements of Section 121 (Requirements For Ventilation) of the California Energy Code. 		
<p>A5.507.1.2 Multi-occupant spaces. Provide lighting and thermal comfort system controls for all shared multi-occupant spaces, such as classrooms and conference rooms.</p>		<input checked="" type="checkbox"/>
<p>A5.507.2 Daylight. Provide day lit spaces as required for top lighting and side lighting in the 2007 California Energy Code. In constructing a design, consider the following:</p> <ol style="list-style-type: none"> 1. Use of light shelves and reflective room surfaces to maximize daylight penetrating the rooms. 2. Means to eliminate glare and direct sun light, including through skylights. 3. Use of photo sensors to turn off electric lighting when daylight is sufficient. 4. Not using diffuse day lighting glazing where views are desired. 		<input checked="" type="checkbox"/>
<p>A5.507.3 Views. Achieve direct line of sight to the outdoor environment via vision glazing between 2' 6" and 7' 6" above finish floor for building occupants in 90 percent of all regularly occupied areas as demonstrated by plan view and section cut diagrams</p>		<input checked="" type="checkbox"/>
<p>A5.507.3.1 Interior office spaces. Entire areas of interior office spaces may be included in the calculation if at least 75 percent of each area has direct line of sight to perimeter vision glazing.</p>		<input checked="" type="checkbox"/>
<p>A5.507.3.2 Multi-occupant spaces. Include in the calculation the square footage with direct line of sight to perimeter vision glazing. Exceptions to Sections A5.507.2 and A5.507.3: Copy/printing rooms, storage areas, mechanical spaces, restrooms, auditoria and other intermittently or infrequently occupied spaces or spaces where daylight would interfere with use of the space.</p>		<input checked="" type="checkbox"/>
<p>A5.507.5 Acoustical control. Public Schools and Community Colleges: Unoccupied, furnished classrooms must have a maximum background noise level of no more than 45 dBA LAeq, and a maximum (unoccupied, furnished) reverberation of 0.6 second time for classrooms with less than 10,000 cubic feet and a maximum (unoccupied, furnished) reverberation of 0.7 second time for classroom volumes with between 10,000 cubic feet and 20,000 cubic feet.</p>		<input checked="" type="checkbox"/>

Notation:

Authority – Education Code Sections 17280--17317 and 81130--81147.

Reference – Education Code Sections 17310 and 81142.