
California Building Standards Commission



CSI Fresno
April 2010

The logo for CALGreen is written in a green, sans-serif font. The word "CAL" is in a larger, bolder font than "Green". A thick green underline is positioned beneath the text, extending from the left and tapering off to the right.

CALGreen

Introductions

California Building Standards Commission

Dave Walls

Executive Director

Enrique Rodriguez

Associate Construction Analyst



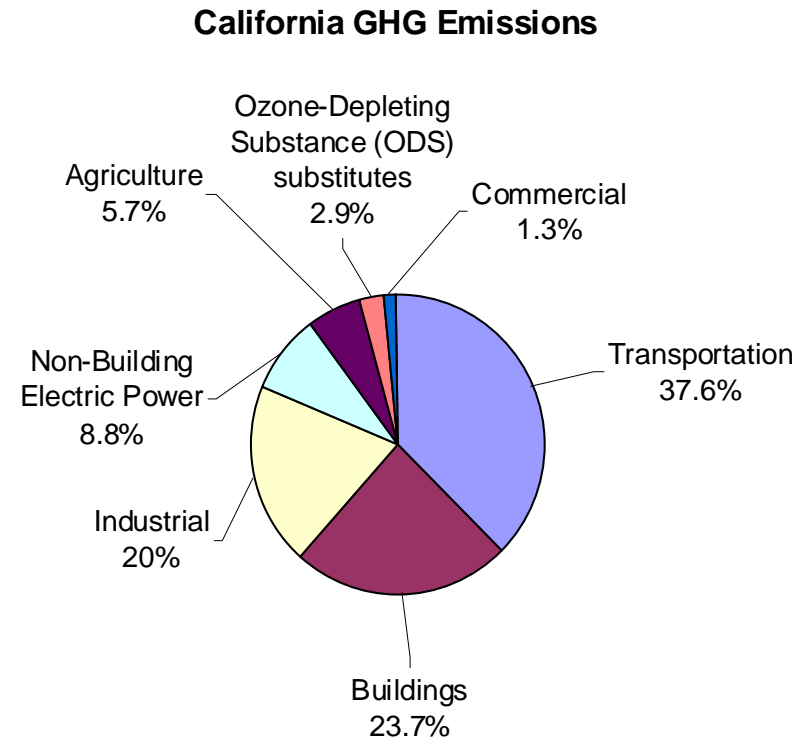
CAL Green

CALGreen Overview

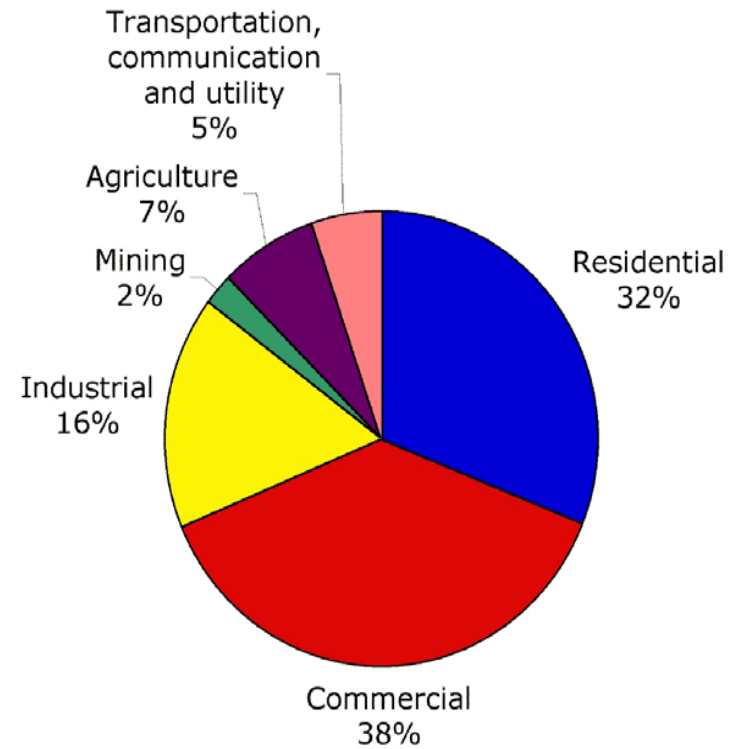
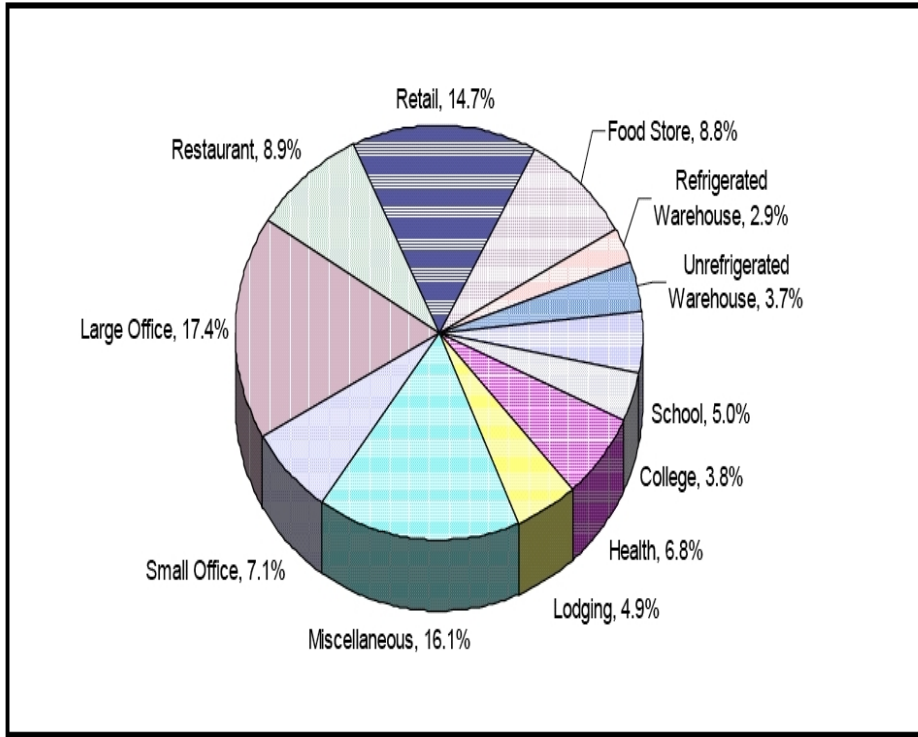
- **Why a CALGreen Code**
- **Building Standards Commission**
- **How the CALGreen Code was developed**
 - Rulemaking process
 - Transparency of process
- **Brief overview of each occupancy group**
- **Overview of Code Provisions (non-res)**

California Green Building Initiative & Global Warming Solutions Act of 2006 (EO S-20-04 & AB32)

- Buildings are 2nd largest contributor (23.7%) to GHG emissions
- EO S-20-04: Reduce grid-based electricity by 20% in state-owned buildings by 2015; reduce associated greenhouse gas emissions
- AB 32: Reduce GHG emissions to 1990 levels by 2020



Energy Use in California



Water Use in California

- **Executive Order S-06-08**

- Implement actions to promote water conservation which will contribute to long term reductions in water use

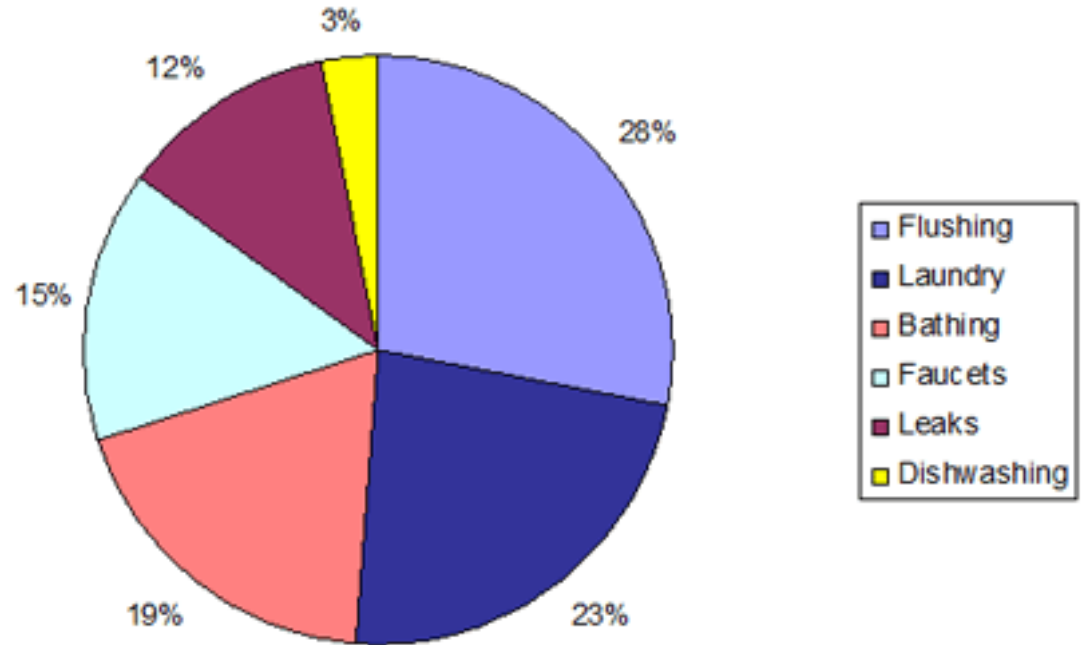
- **Governor's 2009 Proclamation**

- Three years of drought
- The Governor called on all Californians to reduce water use by 20%
- DWR developed "Save Our Water" Program

Water Use in California

Water-related uses account for 19% of California's electricity, 30% of its natural gas and 88 billion gallons of diesel fuel every year. Water-efficiency measures can reduce water and sewer costs by up to 30 percent. Significant savings in energy, chemical and maintenance expenses often follow.

SOURCE - USGS



Typical indoor residential water usage
50 to 300 gpcd – landscape 50%

Source - Water Education Foundation

CALGreen

California Green Building Standards Code

- **Initial Voluntary Standards**
 - Effective August 1, 2009
- **City and County Adoption**
- **2010 Mandatory Standards**
 - Effective January 1, 2011
- **Next Adoption Cycle**

Adopting State Agencies

- ❑ California Building Standards Commission (CBSC)
- ❑ The Department of Housing and Community Development (HCD)
- ❑ Division of the State Architect (DSA)
- ❑ Office of Statewide Health Planning and Development (OSHPD)

Stakeholder Focus Group

- ❑ CBSC's and HCD's Green Building Focus Group
 - ❑ Building officials
 - ❑ Representatives from the construction industry
 - ❑ Representatives from model code writing bodies
 - ❑ Representatives from the environmental community
 - ❑ State agency representatives
 - ❑ Public members

Contributing State Agencies

- ❑ Air Resources Board
- ❑ California Integrated Waste Management Board (CalRecycle)
- ❑ Department of General Services
- ❑ Department of Public Health
- ❑ Department of Water Resources
- ❑ Energy Resources Conservation and Development Commission (Energy Commission)

Additional resources utilized in developing California Green Building Standards Code

- ❑ Collaborative for High Performance Schools (CHPS)
- ❑ Leadership in Energy and Environmental Design (LEED)
- ❑ Green Globes
- ❑ Build It Green
- ❑ UC Berkeley Green Building Baseline
- ❑ Draft ASHRAE Standard 189P

California Building Standards Commission



- Independent Commission
- State and Consumer Services Agency

CBSC Responsibilities

- Review building standards proposed by state agencies
- Develop building standards for occupancies where no other state agency has the authority - non-residential
- Adopt and approve building standards for publication
- File approved building standards with the Secretary of State
- Codify approved building standards
- Contract to publish the California Building Standards Code
- Act as the state depository for local government modifications

California Building Standards Commission

■ Chair

- Secretary of the State and Consumer Services Agency

■ Commissioners (10)

- Appointees specified by law
 - One architect
 - One mechanical, electrical or fire protection engineer
 - One structural engineer
 - One licensed contractor
 - Three public members, at least one must be a person with disabilities
 - One member from organized labor in the building trades
 - One local building official
 - One local fire official
- At least one member knowledgeable in barrier-free architecture
- At least one member knowledgeable in energy efficiency standards

California Building Standards Commission

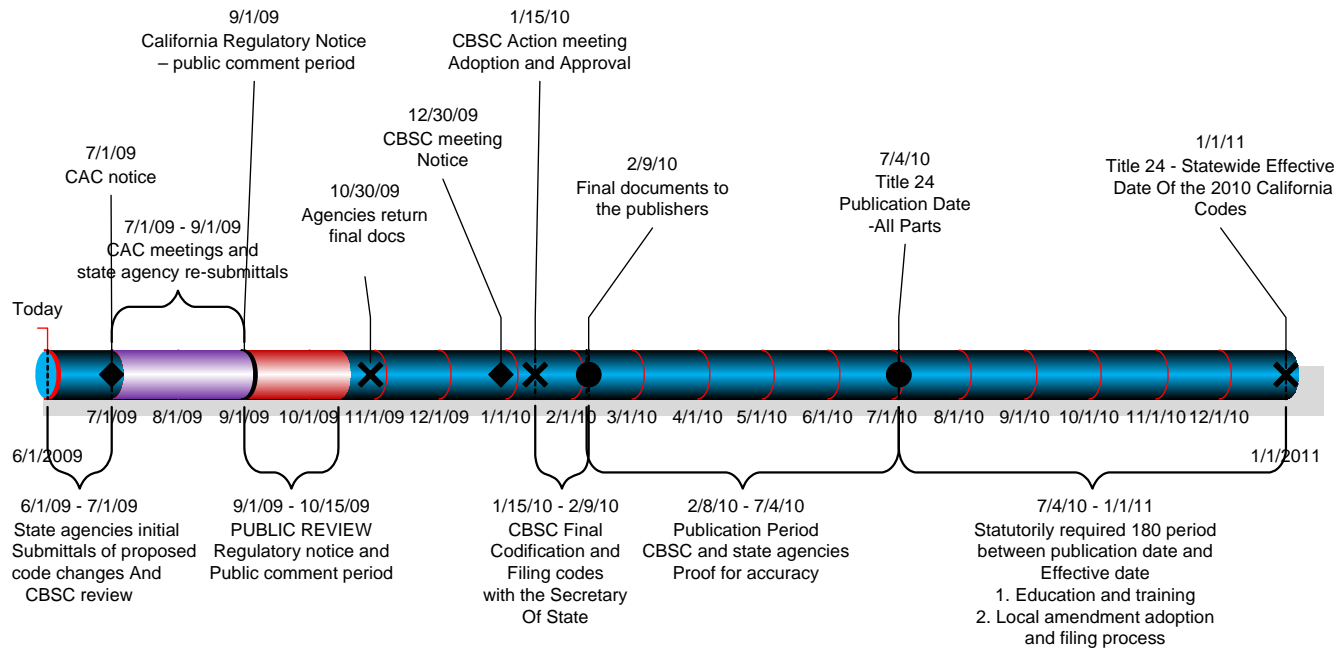
Code Advisory Committees (CAC)

- ❑ Advise Commission and CBSC staff on proposed building standards
- ❑ Six Committees
 - **Green Building Committee**
 - Accessibility Committee
 - Building, Fire and Other Committee
 - Health Facilities Committee
 - Plumbing, Electrical, Mechanical and Energy Committee
 - Structural Design/Lateral Forces Committee

Code Cycle

2009 Annual Code Adoption Cycle

2010 California Building Standards Code Jan. 1, 2011 Effective Date



California Building Standards Code – Title 24

- ❑ Part 1 - California Administrative Code
- ❑ Part 2 - California Building Code
- ❑ Part 2.5 California Residential Code
- ❑ Part 3 - California Electrical Code
- ❑ Part 4 - California Mechanical Code
- ❑ Part 5 - California Plumbing Code
- ❑ Part 6 - California Energy Code
- ❑ *Part 7 - Vacant*
- ❑ Part 8 - California Historical Building Code
- ❑ Part 9 - California Fire Code
- ❑ Part 10 - California Existing Building Code
- ❑ *Part 11 - California Green Building Standards Code*
- ❑ Part 12 - California Referenced Standards Code



Administration Procedure Act

- **Public Comment Period**
 - 45 day and 15 Day
- **Public Hearings**
 - If requested
- **Commission Meeting**
 - Public comments



Local Amendments

- Local Government Ordinances
 - Local governments may make more stringent modifications to the California Building Standards Code
 - Justification for making local modifications
 - Climate
 - Topography
 - Geology

2010 California Green Building Standards Code

(effective January 1, 2011)

■ Chapter 1 Administration

- Purpose (101.2)
 - Environmental impact
- Scope (101.3)
 - New construction
 - Not intended to be identified as meeting the requirements of a point rated system
- Local amendments based on findings (101.7)
 - Climate
 - Topography
 - Geology
- Alternate Materials and Methods (101.8)
- Construction Documents (102)
- Application and State Agency Authorities (103 - 106)

2010 California Green Building Standards Code

■ Matrices

■ Chapter 2 Definitions

- If used in more than one location in the code a defined term will be located in Chapter 2
- If only used in one chapter the defined term will be located in the definition section at the beginning of that chapter
- Banners will tell which agency adopts
 - CONDITIONED FLOOR AREA. [BSC, HCD]

2010 California Green Building Standards Code

■ Chapter 3 Green Building

- Scope
 - Newly constructed buildings
- Mixed Occupancy Buildings
 - Shall comply with appropriate requirements for each separate occupancy type
- Phased Projects
- Voluntary Tiers
 - Tier 1 and Tier 2

2010 California Green Building Standards Code

- **Chapter 4 Residential Mandatory Measures**
- **Chapter 5 Nonresidential Mandatory Measures**
- **Chapter 6 Reference Organizations and Standards**
- **Chapter 7 Installer and Special Inspector Qualifications**
- **Chapter 8 Compliance Forms and Worksheets**

2010 California Green Building Standards Code

- **Checklists**
- **Chapter A4**
 - Residential Tiers and Electives
- **Chapter A5**
 - Non-Residential Tiers and Electives
 - Grid Neutral (DSA)
 - Energy Electives (OSHPPD)

California Building Standards Commission

2010 California Green Building Standards Code

- **Chapter 5**
 - Nonresidential Mandatory Measures**
 - **Planning and Design**
 - **Energy Efficiency**
 - **Water Efficiency and Conservation**
 - **Material Conservation and Resource Efficiency**
 - **Environmental Quality**

PLANNING AND DESIGN –

CHAPTER 5 - Division 5.1

Site Development

- Storm water pollution prevention plan (SWPPPs)
 - New projects less than one acre
 - Currently required for all projects one acre or more
- Bicycle parking
 - Short-term bicycle parking – 5% of visitor parking capacity
 - Long-term bicycle parking – 5% of total parking capacity

PLANNING AND DESIGN –

CHAPTER 5 - Division 5.1

Site Development

- Designated parking for clean air vehicles
 - Stall marking for 8% of total parking capacity
 - Vehicles defined in Section 5.102
 - Not necessarily preferential location

PLANNING AND DESIGN –

CHAPTER 5 - Division 5.1

Site Development

- Light pollution reduction
 - Reference the California Energy Code lighting standards
 - Exceptions for emergency lighting and security
- Grading & paving
 - Keep surface water from entering building
 - Grading shown on construction plans

ENERGY EFFICIENCY –

Chapter 5 - Division 5.2

Mandatory Measures are Regulated by the California Energy Commission

- Mandatory provisions are found in Part 6 of Title 24

WATER EFFICIENCY AND CONSERVATION CHAPTER 5 - Division 5.3

Indoor Water Use

- Separate water meters
 - Buildings in excess of 50,000 square feet where tenants use more than 100 gallons per day
 - Excess consumption more than 1000 gallons per day

WATER EFFICIENCY AND CONSERVATION CHAPTER 5 - Division 5.3

Indoor Water Use

- 20% Savings of potable water
 - Performance or prescriptive standards, using tables 5.303.2.2 or 5.303.2.3
 - Multiple showerheads serving one shower
 - Wastewater reduction of 20%
- Standards for plumbing fixtures and fittings
 - Standards referenced in Table 5.503.6

WATER EFFICIENCY AND CONSERVATION

CHAPTER 5 - Division 5.3

Outdoor Water Use

- Water budget – Currently required by DWR or local agency for landscapes 2,500 square feet and over
- Separate meter for outdoor potable water use for landscape areas between 1,000 & 5,000 square feet
- Irrigation design
 - Weather or soil moisture-based irrigation controllers and rain sensors

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 - Division 5.4

Water Resistance and Moisture Management

- Exterior weather protection currently in Title 24 or by local ordinance
- Design for moisture control
 - Prevent spray from sprinklers on structures
 - Prevent entries and openings from water intrusion

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 -

Division 5.4

Construction Waste Reduction, Disposal and Recycling

- Construction waste diversion – establish a waste management plan
- Construction waste management plan (WMP)
 - Documentation (see sample forms in Chapter 8)
 - Exception for isolated jobsites

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 - Division 5.4

Construction Waste Reduction, Disposal and Recycling

- Construction waste reduction of at least 50%
 - Exception to allow alternate waste reduction method
- 100% of excavated soil and land clearing debris

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 -

Division 5.4

Building Maintenance and Operation

- Recycling by occupants – required by law since 1991
 - Sample ordinance

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 - Division 5.4

Building Maintenance and Operation

- Commissioning for new buildings 10,000 square feet and over including:
 - Owner's or Owners Representative's Project Requirements (OPR)
 - Basis of Design (BOD)
 - Commissioning plan
 - Functional performance testing
 - Documentation and training
 - Systems manual
 - Systems operations training
 - Commissioning report

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 -

Division 5.4

Building Maintenance and Operation

- Verification and compliance:
 - Commissioning plan, including qualifications of commissioning team
 - Results of performance tests
 - Commissioning report
 - Systems manual

MATERIAL CONSERVATION AND RESOURCE EFFICIENCY - CHAPTER 5 - Division 5.4

Building Maintenance and Operation

- Testing and adjusting for new buildings under 10,000 square feet
 - Balancing of HVAC systems
 - Verification of compliance – inspection verifications and reports

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Fireplaces

- Direct-vent sealed gas fireplaces
- Sealed wood-burning fireplaces
- Wood burning stoves

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Pollutant Control

- Covering of duct openings
- Protection of mechanical equipment during construction

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Pollutant Control

- Finish material pollutant control – low VOC-emitting products
 - Adhesives and sealants and caulks
 - Paints and coatings – Air Resources Board standards
 - Aerosol Paints and Coatings
 - Carpet systems – 100%
 - Carpet cushion and carpet adhesives
 - Composite wood products – Air Resources Board standards
 - Resilient flooring – 50% of resilient flooring
 - Verification of compliance may be record of product data or other methods acceptable to the enforcing agency

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Pollutant Control

- Air filters at least MERV 8
- Environmental tobacco smoke control – outdoor areas for smoking
 - Local ordinance may apply

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Indoor Moisture Control

- Reference Title 24, Part 2, Section 1203 and Chapter 14

Indoor Air Quality

- Outside air delivery - by California Energy Code, local code, or Title 8, whichever is more restrictive
- Carbon dioxide (CO₂) monitoring – for buildings with demand control ventilation per the California Energy Code

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Environmental Comfort

- Acoustical Control based on ASTM E90 and ASTM E413
 - Exterior noise transmission – depends on project location
 - Interior sound – minimum STC 40 for separations

ENVIRONMENTAL QUALITY –

CHAPTER 5 - Division 5.5

Outdoor Air Quality

- Ozone depletion and greenhouse gas reductions
 - Chlorofluorocarbons (CFCs)
 - Halons

California Building Standards Commission

Appendix A5

- ❑ **Nonresidential Voluntary Measures**
- ❑ Grid Neutral (DSA)
- ❑ Energy Electives (OSHPPD)

2010 California Green Building Standards Code

(effective January 1, 2011)

NONRESIDENTIAL VOLUNTARY MEASURES

Appendix A5

The measures contained in the appendix are not mandatory unless adopted by a city, county, or city and county. CALGreen Tier 1 and Tier 2 are intended for adoption by cities, counties, and cities and counties to help California meet its goals for greenhouse gas emission reduction. Appendix provisions may also be used voluntarily by designers, builders, and property owners.

NONRESIDENTIAL VOLUNTARY MEASURES

To achieve CALGreen Tier 1 or Tier 2, one must comply with the following:

- Meet all mandatory requirements;
- Exceed 2008 Energy Efficiency Standards by 15% or 30%;
- Employ additional voluntary measures in all the following areas:
 - Parking for clean air vehicles
 - Cool roofs
 - Reduction of indoor and outdoor water use
 - Construction waste diversion
 - Use of materials with recycled content
 - Installation of low-emitting resilient flooring and thermal insulation; and

NONRESIDENTIAL VOLUNTARY MEASURES

To achieve CALGreen Tier 1 or Tier 2, one must comply with the following:

- **Comply with additional elective measures as follows:**
 - 5 electives for Tier 1
 - 15 electives for Tier 2
- **Application Checklist**
 - Mandatory provisions
 - Provisions required for compliance with tiers

Section 5.408 and A5.408

SECTION 5.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

5.408.1 Construction waste diversion. [BSC, DSA-SS] 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 Construction waste management plan. [BSC, DSA-SS] 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:

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.

5.408.2.1 Documentation. [BSC, DSA-SS] 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. [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.

5.408.2.2 Isolated jobsites. [BSC, 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 <http://www.ciwmb.ca.gov/ConDemo/>.

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

Exceptions:

1. Excavated soil and land-clearing debris
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.

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

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

A5.408.3.1 Enhanced construction waste reduction [BSC]. Divert to recycle or salvage non-hazardous construction and demolition debris generated at the site in compliance with one of the following:

- Tier 1 At least a 65% reduction.
- Tier 2. At least an 80% reduction.

A5.408.3.1.1 Verification of compliance. [BSC] A copy of the completed waste management report shall be provided.

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GOVERNOR SCHWARZENEGGER
Visit his Website

Buildings Standards Commission
Executive Director David Walls

Save money, energy and the environment. Flex your POWER!

Welcome to the California Building Standards Commission Website

Welcome to the California Building Standards Commission website. CBSC is responsible for administering California's building codes, including adopting, approving, publishing, and implementing codes and standards. This site provides information on:

- **New!** Governor Schwarzenegger announces **First-in-the-Nation Statewide Green Building Standards Code** /abt_bsc/press.htm.
- **CALGreen** Draft 2010 California Green Building Standards (CALGreen) Code. [\[PDF\]](#), or link to the [CALGreen](#) page]. Scheduled to become effective on January 1, 2011, this draft is provided for informational purposes only pending publication.

FEATURED LINKS



California Building Standards Commission

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Education & Outreach

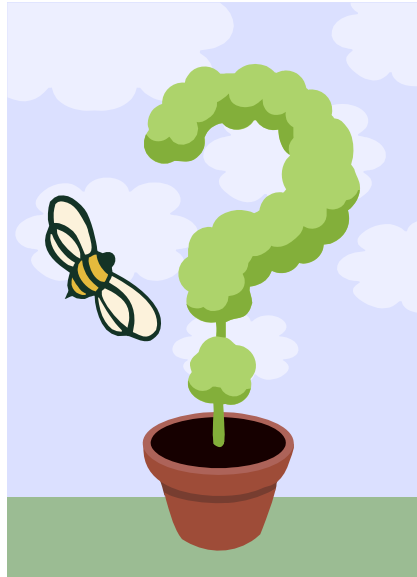
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Questions?



THANK YOU!