

SEEC Webinar

CALGreen



Introductions

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Housing & Community Development

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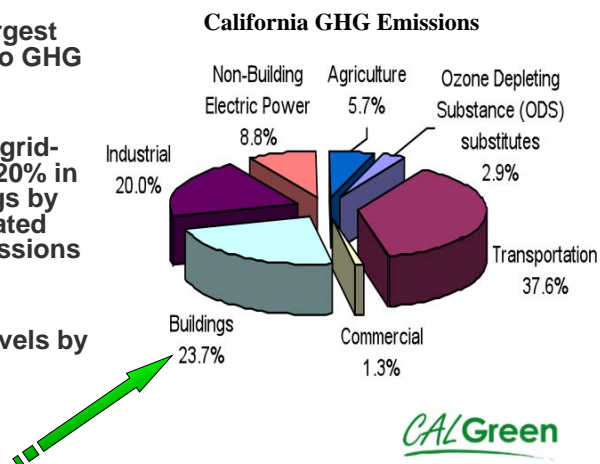
Today's Objectives

- Why a CALGreen Code
- How the CALGreen Code was developed
- Overview of Residential Code Provisions

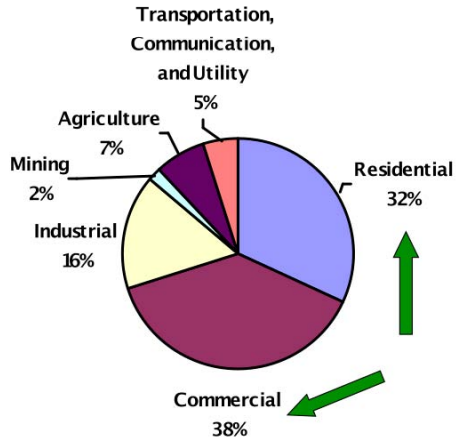
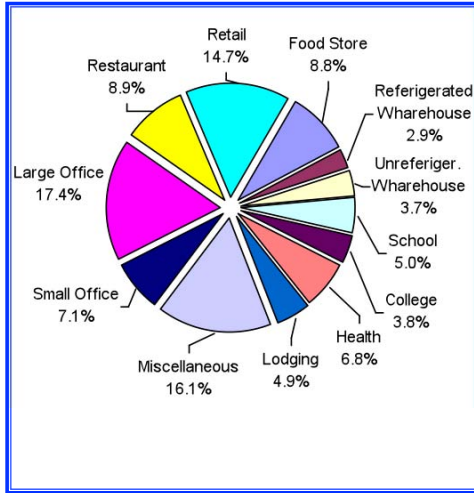
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California Green Building Initiative & Global Warming Solutions Act of 2006 (EO S-20-04 & AB32)

- 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



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Water Use in California

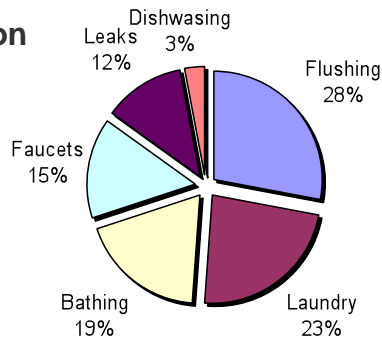
Executive Order S-06-08 Governor's 2009 Proclamation

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 typically follow.

SOURCE - USGS



Typical Residential Water Use (Indoor use)

50 to 300 gpcd - **landscape 50%**

Source - Water Education Foundation

Why CALGreen

Uniformity and Consistency

- Jurisdictions adopting many different programs
- Works with other California codes
- Sustainability

■ Governor's Directive

The logo for CALGreen, featuring the text "CALGreen" in a green, sans-serif font with a thin green underline.

Adopting State Agencies

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

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•Development of CALGreen

- ❑ Stakeholder Green Building Focus Group
 - ❑ Building officials
 - ❑ Representatives from the construction industry
 - ❑ Representatives from model code writing bodies
 - ❑ Representatives from the environmental community
 - ❑ Representatives from point rating programs
 - ❑ State agency representatives
 - ❑ Public members

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Contributing State Agencies

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

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Additional resources utilized in developing California Green Building Standards Code

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

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🏠 State Housing Law

The SHL was enacted to protect the health, safety and general welfare of the public and occupants of dwelling units in the State of California. Under this authority, HCD promulgates building standards and regulations to ensure that hotels, motel, apartments, single-family dwellings, and other residential buildings are constructed and maintained in compliance with the model building codes and other provisions of State law.



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Includes
High Rise

HCD Authority
Hotels, Motels
Apartment Houses
Dwellings
Lodging Houses
Homeless Shelters
Monasteries, Convents
Employee Housing
Factory-Built Housing



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What is CALGreen

- It is a statewide mandatory construction code
- It is not the same as a rating system or point based program
- It is statutorily enforced by local enforcing agencies
- It does not require outside inspection, review or certification by any entity other than the enforcing agencies
- It preserves local ability to make enhancements or modifications
- A word about comparisons and confusion

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2010 California Building Standards Code – Title 24

(effective January 1, 2011)

- 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



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The Code Of Hammurabi

- The Code Of Hammurabi (1760 BC) contained 282 laws including some which covered building construction.
- If a builder build a house for some one, and does not construct it properly, and the house which he built fall in and kill its owner, then that builder shall be put to death.
- If it ruin goods, he shall make compensation for all that has been ruined, and inasmuch as he did not construct properly this house which he built and it fell, he shall re-erect the house from his own means.
- If a builder build a house for some one, even though he has not yet completed it; if then the walls seem toppling, the builder must make the walls solid from his own means.

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Code Format

- Chapter 1 Administration
- Chapter 2 Definitions
- Chapter 3 Green Building
- 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
- Appendix A4
- Appendix A5

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California Green Building Standards Code

■ Chapter 1 Administration

- Purpose
 - Minimize impact of construction and improve construction practices
- Scope
 - New construction
 - Low-rise residential
- Local amendments based on findings
 - Climate
 - Topography
 - Geology
- Alternate Materials and Methods
- Construction Documents
- Application and State Agency Authorities



California Green Building Standards Code

■ 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]



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

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Chapter 4 – Residential Mandatory Measures

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Chapter 4 – Residential Mandatory Measures

Five Divisions

- ④ Division 4.1 - Planning and Design
- ④ Division 4.2 - Energy Efficiency
- ④ Division 4.3 - Water Efficiency and Conservation
- ④ Division 4.4 - Material Conservation and Resource Efficiency
- ④ Division 4.5 - Environmental Quality



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Chapter 4 – Residential Mandatory Measures

Division 4.1 - Planning and Design

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§ 4.106.2 Storm water drainage and retention.

- Construction projects less than one acre are outside the scope of the California State Water Resources Control Board (SWRCB).
- Will help prevent flooding of adjacent property and prevent pollution from storm water runoff by retaining soil on-site or by providing filtering to restrict sedimentation from reaching storm water drainage systems and receiving streams or rivers.
- Establishes criteria for a plan to manage storm water drainage during construction.

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§ 4.106.3 Surface Drainage.

- Requires planning of the surface drainage system that will serve the site.
- Requires the construction plans to indicate how surface drainage will be managed.

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Division 4.2 – Energy Efficiency

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Energy Efficiency

§ 4.201.1 Minimum Energy Performance for Low-Rise Residential Buildings.

- The California Energy Commission (CEC) adopts regulations to establish the minimum level of energy efficiency a heated or cooled structure must meet or exceed.

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Division 4.3 – Water Efficiency and Conservation

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§ 4.303.1 20% Water savings.

- Requires a 20% reduction of indoor water use.
- Provides a prescriptive and performance method.

Mandatory effective date for
20% reduction is July 1, 2011

Concerns over availability of fixtures and performance

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§ 4.303.2 Multiple Showerheads Serving One Shower.

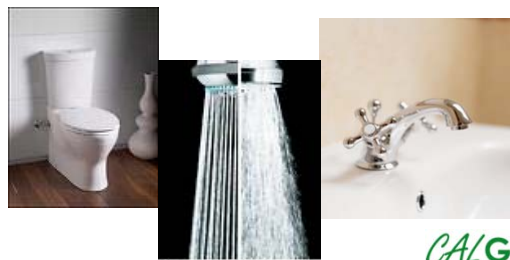
- When using the prescriptive method, the sum of multiple showerheads shall not exceed the flow rate specified in Table 4.303.2.
- When using the performance method, the maximum flow rate for each shower head shall not exceed 2.5 gpm @ 80 psi.

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§ 4.303.3 Plumbing Fixtures and Fittings.

- Specifies acceptable performance standards for plumbing fixtures with reduced water usage.



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§ 4.304.1 Irrigation Controllers.

- Requires irrigation controls to be weather- or soil moisture-based and automatically adjust irrigation in response to changes in plants' needs as weather conditions change, or have rain sensors or communication systems that account for local rainfall.



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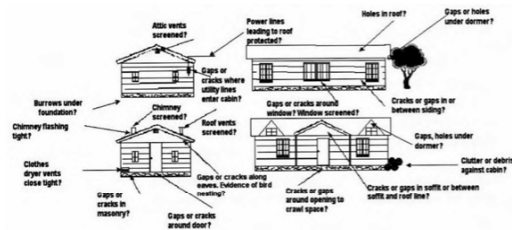
Division 4.4 – Material Conservation and Resource Efficiency

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§ 4.406.1 Joints and Openings.

- Establishes a requirement to fill spaces around pipes and other penetration in the building with materials that will prevent the passage of rodents.



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§ 4.408.1 through 4.408.2.2 Construction Waste Reduction, Disposal and Recycling.

- Requires at least of 50% of nonhazardous construction and demolition debris to be recycled and/or salvaged, or;
- Compliance with a local waste ordinance which is more stringent.
- Exceptions:
 - Soil and land clearing debris are exempt
 - Alternate methods or exceptions may be approved due to local constraints



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Chapter 4 – Residential Mandatory Measures

§ 4.410.1 Building Maintenance and Operation.

- Requires educational materials, operation and maintenance manuals are provided to ensure buildings and equipment are properly maintained.
 - As construction practices become more sophisticated, a certain level of knowledge is required to maintain building systems and equipment.
- Other information such as landscape design and maintenance, public transportation options, recycle opportunities, special inspection reports, and energy incentive programs.

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Division 4.5 – Environmental Quality

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§ 4.503.1 Fireplaces.

- Requires gas fireplaces to be direct-vent, wood and pellet stoves to comply with EPA limits or comply with a local ordinance which is more or prohibitive.



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§ 4.504.1 Covering of Duct Openings and Protection of Mechanical Equipment During Construction.



- Requires duct openings, permanent mechanical equipment and other components that will be used to move air in the building after occupancy be protected from contamination during construction.
 - These systems are commonly used to condition the building during construction. Typically, they are not protected leading to a collection of dust and debris exposed to the circulated air within the structure.

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Chapter 4 – Residential Mandatory Measures

§ 4.504.2 Finish Material Pollutant Control.

- Limits pollutants from the off-gassing of finish materials inside a residence.
- Tables are provided that establish limits on the emissions of VOCs in adhesives, paints, and other coatings.
- VOC limitations are also included for carpet, carpet cushions and carpet pad adhesives.

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Chapter 4 – Residential Mandatory Measures

§ 4.504.2 Finish Material Pollutant Control.

- A table addressing the formaldehyde limits was developed based on maximum allowable limits recently established by the California Air Resources Board (ARB).
- Ensures these levels are met by including a mandatory verification component which requires certification or documentation.

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Chapter 4 – Residential Mandatory Measures

§ 4.505.2 Concrete Slab Foundations.

- Provides explicit requirements for the installation of vapor barriers in slab on grade foundations to address moisture and mold issues that can negatively affect indoor air quality as well as damage floor coverings.
- Allows equivalent methods to be used provided the same protections will be maintained.

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Chapter 4 – Residential Mandatory Measures

§ 4.505.3 Moisture Content of Building Materials.

- Requires the moisture content of construction materials and insulation to be verified prior to approval to enclose wall and floor cavities with drywall or other finish surfaces.
- HCD currently adopts sections of the CBC which specify maximum grading and mill certification levels of moisture in framing materials. This section requires field verification and protection during wet weather.



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Chapter 4 – Residential Mandatory Measures

§ 4.506.1 Bathroom Exhaust Fans.

- Requires exhaust fans in any room which contains a bathtub or shower.
- Allows a whole house ventilation system designed to provide outside air to be used to comply with this section.
- Intended to reduce moisture inside the residence.
- Fans must be ENERGY STAR compliant.
- Humidistat controls.



Chapter 4 – Residential Mandatory Measures

§ 4.507.1 Openings.

- Requires the openings for whole house exhaust fans to be insulated.



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Chapter 4 – Residential Mandatory Measures

§ 4.507.2 Heating and Air-conditioning System.

- Establishes minimum requirements for heating and air conditioning design.
 - Heat loss and heat gain.
 - Duct system sizing.
 - Equipment selection.
- Allows designers flexibility to design based on local conditions.



Chapter 4 – Residential Mandatory Measures

Chapter 7 – Installer and Special Inspector Qualifications



Chapter 7 – Residential Mandatory Measures

§ 702.1 Installer Training.

- Establishes minimum requirements for heating and air conditioning installers.



Chapter 7 – Residential Mandatory Measures

§ 702.2 Special Inspection.

- Establishes minimum requirements for third party inspectors acting on behalf of the enforcing agency.
- Similar to structural special inspections.



Chapter 8 – Residential Mandatory Measures

- ❑ Sample forms for construction waste management plans
- ❑ Water use worksheets
- ❑ More compliance forms will be added

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Appendix A4 – Residential Voluntary Measures

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Appendix A4.

- The appendix was developed in response to numerous stakeholders requesting a **statewide and consistent** option to enhance the level of construction beyond the CALGreen minimum level.
- Tier based which go beyond the code minimum.
- Developed a checklist which can be used which can be used to select and manage the tiers.
- Included a sample resolution that may be used during the local adoption process.

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Tier 1 and Tier 2

- Scope
 - The measures contained in the appendix are not mandatory unless adopted by a city, county, or city and county.
 - In order to meet one of the tier levels designers, builders, or property owners are required to incorporate additional green building measures necessary to meet the threshold of each level.

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➤ Prerequisite Measures

➤ Tier 1 and Tier 2 thresholds require compliance with the mandatory provisions of this code and incorporation of the required prerequisite measures listed for Tier 1 and Tier 2.

➤ Prerequisite measures are also identified in the Residential Application Checklist.

➤ Additional prerequisite measures may be included by the enforcing agency to address specific local environmental conditions and may be listed in the Innovative Concepts and Local Environmental Conditions portions of the checklist.



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➤ Elective Measures

➤ In addition to the required mandatory minimum and prerequisite measures, Tier 1 and Tier 2 buildings must incorporate a specified number of elective measures.



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> Tier 1 Prerequisites:

- > Topsoil protection (A4.106.2.3).
- > 20% permeable paving (A4.106.4).
- > Tier 1 cool roof requirements (A4.106.5).
- > Exceed the CEC's 2008 Energy Efficiency Standards by 15%.
- > Reduced flow rate for kitchen sink faucets (A4.303.1)
- > Tier 1 landscape irrigation reduction (A4.304.4).
- > 20% cement reduction (A4.403.2)
- > 10% recycled content requirements (A4.405.3)
- > 65% reduction in construction waste (A4.408.1)
- > 80% resilient flooring systems requirements (A4.504.2)
- > Low VOC thermal insulation requirements (A4.504.3)



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> Tier 1 Electives:

- > Choose at least two (2) Planning and Design elective measures from Division A4.1.
- > Choose at least four (4) Energy Efficiency elective measures Division A4.2.
- > Choose at least one (1) Water Efficiency and Conservation elective measure from Division A4.3.
- > Choose at least two (2) Material Conservation and Resource Efficiency elective measures from Division A4.4.
- > Choose least one (1) Environmental Quality elective measure from Division A4.5.



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Tier 2

- Note: The measures necessary to achieve Tier 2 status are very stringent. Cities, counties and cities and counties considering adoption of Tier 2 as mandatory should carefully consider the stringency of each measure and ensure that the measures are achievable in their location.



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➤ Tier 2 Prerequisites:

- Topsoil protection for Tier 1 and Tier 2 (A4.106.2.3).
- 30% permeable paving (A4.106.4).
- Tier 2 cool roof requirements (A4.106.5).
- Exceed the CEC's 2008 Energy Efficiency Standards by 30%.
- Reduced flow rate for kitchen sink faucets (A4.303.1)
- Dishwasher requirements in (A4.303.1)
- Tier 2 landscape irrigation reduction (A4.304.4).
- 25% cement reduction (A4.403.2)
- 15% recycled content requirements (A4.405.3)
- 75% reduction in construction waste (A4.408.1)
- 90% resilient flooring systems requirements (A4.504.2)
- Tier 1 and Tier 2 thermal insulation requirements



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➤ Tier 2 Electives:

- Choose at least four (4) Planning and Design elective measures from Division A4.1.
- Choose at least six (6) Energy Efficiency elective measures Division A4.2.
- Choose at least two (2) Water Efficiency and Conservation elective measure from Division A4.3.
- Choose at least four (4) Material Conservation and Resource Efficiency elective measures from Division A4.4.
- Choose least one (1) Environmental Quality elective measure from Division A4.5.



SECTION A4.6.2 RESIDENTIAL OCCUPANCIES APPLICATION CHECKLIST

FEATURE OR MEASURE	LEVELS APPLICANT TO SELECT ELECTIVE MEASURES			VERIFICATIONS ENFORCING AGENCY TO SPECIFY VERIFICATION METHOD		
	Mandatory	Prerequisites and electives ¹		Enforcing Agency	Installer or Designer	Third party
		Tier 1	Tier 2	<input type="checkbox"/> All	<input type="checkbox"/> All	<input type="checkbox"/> All
4.504.3 Carpet and carpet systems shall be compliant with VOC limits.	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.504.4 50 percent of floor area receiving resilient flooring shall comply with the VOC-emission limits defined in the Collaborative for High Performance Schools (CHPS) Low-emitting Materials List or be certified under the Resilient Floor Covering Institute (RIFCI) FloorScore program.	<input checked="" type="checkbox"/>					
4.504.5 Particleboard, medium density fiberboard (MDF) and hardwood plywood used in interior finish systems shall comply with low formaldehyde emission standards.	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.504.1 Meet the formaldehyde limits contained in Table 4.504.5 before the mandatory compliance date, or use composite wood products made with either California Air Resources Board approved no-added formaldehyde (NAF) resins or ultra-low emitting formaldehyde (ULEF) resins.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A4.504.2 Install VOC compliant resilient flooring systems. Tier 1. At least 80 percent of the resilient flooring installed shall comply. Tier 2. At least 90 percent of the resilient flooring installed shall comply.		<input checked="" type="checkbox"/> ²	<input checked="" type="checkbox"/> ²	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Future Developments

- Outreach, training and education.
- Implementation and compliance aids.
- CALGreen Guide (2nd Printing)



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www.hcd.ca.gov

CA .GOV Department of Housing and Community Development

Home Codes and Standards Financial Assistance Housing Policy Development

Office of Governor Jerry Brown Visit his Website

Business, Transportation and Housing Agency

Acting Department Director Cathy Creswell Housing and Community Development

PERMANENT SOURCE

THE DEPARTMENT

- Employment Opportunities
- HCD Web News
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IMPORTANT INFORMATION

2010 State Income Limits

BUILDING CALIFORNIA'S FUTURE

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PMIB Info

INFORMATION ABOUT...

Online Services Propositions 46 & 1C Resources Quick Links Highlights CALGreen

- File A Mobilehome Park Complaint
- Mobilehome & Special Occupancy (RV) Parks Listing
- Manufactured Home/Mobilehome Registration Renewal
- Occupational Licensing Query
- Redevelopment Agency Reporting System (RDA)
- Requestor Account Title Search
- Title Search and Escrow Opening

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Questions?



THANK YOU!

*CAL*Green