



RESIDENTIAL MANDATORY MEASURES EFFECTIVE JANUARY 1, 2017

2016 CALGREEN CODE

SECTION	REQUIREMENTS
Chapter 1 - ADMINISTRATION	
Scope	
101.3.1	Applies to ALL newly constructed residential buildings: low-rise, high-rise, and hotels/motels.
Chapter 3 - GREEN BUILDING	
Additions and alterations	
301.1.1	<ul style="list-style-type: none"> Applies to additions or alterations of residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. Requirements only apply within the specific area of the addition or alteration. Note directs code users to Civil Code Section 1101.1 et seq., regarding replacement of non-compliant plumbing fixtures.
Low-rise and high-rise buildings	
301.2	Banners identify provisions applying to low-rise only [LR] or high-rise only [HR].
Division 4.1 - PLANNING AND DESIGN (SITE DEVELOPMENT)	
Storm water drainage and retention during construction	
4.106.2	Projects which disturb less than 1 acre of soil and are not part of a larger common plan of development shall manage storm water drainage during construction.
Grading and paving	
4.106.3	Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Exception for additions and alterations which do not alter the existing drainage path.
Electric vehicle (EV) charging for new construction	
4.106.4	<ul style="list-style-type: none"> Comply with Section 4.106.4.1 and 4.106.4.2 for future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625. Exceptions on a case-by-case basis as determined by the Local Enforcing Agency: <ol style="list-style-type: none"> Where there is no commercial power supply. Verification that meeting requirements will alter the local utility infrastructure design requirements on the utility side of the meter increasing costs to the homeowner/developer by more than \$400.00 per dwelling unit.
EV charging: 1- & 2-family dwellings/townhouses with attached private garages	
4.106.4.1 & 4.106.4.1.1	<ul style="list-style-type: none"> Install a listed raceway to accommodate a dedicated 208/240-volt branch circuit for each dwelling unit. Raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). Raceway shall originate at the main service or subpanel and terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. Service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device. Service panel or subpanel circuit



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4.106.4.1 & 4.106.4.1.1 continued	directory shall identify the overcurrent protective device space(s) reserved for future EV charging as “EV CAPABLE”. The raceway termination location shall be permanently and visibly marked as “EV CAPABLE”.
	EV charging for multifamily dwellings
4.106.4.2	<ul style="list-style-type: none"> • Applies to building sites with 17 or more multifamily dwelling units constructed on the site. • 3% of the total number of parking spaces provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the number of EV spaces shall be rounded up to the nearest whole number. <p>Note: Construction documents are intended to demonstrate the project’s capability and capacity for facilitating future EV charging. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.</p>
	EV charging space (EV space) locations
4.106.4.2.1	<ul style="list-style-type: none"> • Construction documents shall indicate the location of proposed EV spaces. At least 1 EV space shall be located in common use areas and available for use by all residents. • When EV chargers are installed, EV spaces required by Section 4.106.4.2.2, Item 3, shall comply with at least 1 of the following options: <ol style="list-style-type: none"> 1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the California Building Code, Chapter 11A, to allow use of the EV charger from the accessible parking space. 2. The EV space shall be located on an accessible route to the building, as defined in the California Building Code, Chapter 2.
	EV charging space (EV space) dimensions
4.106.4.2.2	<p>EV spaces shall be designed to comply with the following:</p> <ol style="list-style-type: none"> 1. The minimum length of each EV space shall be 18 feet. 2. The minimum width of each EV space shall be 9 feet. 3. One in every 25 EV spaces, but not less than 1, shall also have an 8-foot wide minimum aisle. A 5-foot wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet. <ol style="list-style-type: none"> a) Surface slope for this EV space and aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083% slope) in any direction.
	Single EV space required
4.106.4.2.3	<ul style="list-style-type: none"> • Install listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. <ul style="list-style-type: none"> ▪ The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). ▪ The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space.



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4.106.4.2.3 continued	<ul style="list-style-type: none"> Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.
4.106.4.2.4	<p style="text-align: center;">Multiple EV spaces required</p> <ul style="list-style-type: none"> Construction documents shall indicate raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at full rated amperage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Raceways and related components planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.
4.106.4.2.5	<p style="text-align: center;">Identification</p> <p>The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as “EV CAPABLE” in accordance with the California Electrical Code.</p> <p>Notes:</p> <ol style="list-style-type: none"> The California Department of Transportation adopts and publishes the “California Manual on Uniform Traffic Control Devices (California MUTCD)” to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives Number 12-01. Website: http://www.dot.ca.gov/hq/traffops/policy/13-01.pdf See Vehicle Code Section 22511 for EV charging space signage in off-parking facilities and for use of EV charging spaces. The Governor’s Office of Planning and Research (OPR) published a “Zero-Emission Vehicle Community Readiness Guidebook” which provides helpful information for local governments, residents and businesses. Website: http://opr.ca.gov/docs/ZEV_Guidebook.pdf
Division 4.2- ENERGY EFFICIENCY	
4.201.1 & 5.201.1	<p style="text-align: center;">Scope</p> <ul style="list-style-type: none"> Energy efficiency requirements for low-rise residential (Section 4.201.1) and high-rise residential/hotels/motels (Section 5.201.1) are now in both residential and nonresidential chapters of CALGreen. Standards for residential buildings do not require compliance with levels of minimum energy efficiency beyond those required by the 2016 California Energy Code.



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SECTION	REQUIREMENTS
Division 4.3 – WATER EFFICIENCY AND CONSERVATION (INDOOR WATER USE)	
Water conserving plumbing fixtures and fittings	
4.303.1	Plumbing fixtures and fittings shall comply with the following:
	4.303.1.1 Water Closets: ≤ 1.28 gal/flush
	4.303.1.2 Wall Mounted Urinals: ≤ 0.125 gal/flush; all other urinals ≤ 0.5 gal/flush
	4.303.1.3.1 Single Showerheads: ≤ 2.0 gpm @ 80 psi
	4.303.1.3.2 Multiple Showerheads: combined flow rate of all showerheads controlled by a single valve shall not exceed 2.0 gpm @ 80 psi, or only one shower outlet is to be in operation at a time
	4.303.1.4.1 Residential Lavatory Faucets: Maximum Flow Rate ≤ 1.2 gpm @ 60 psi; Minimum Flow Rate ≥ 0.8 gpm @ 20 psi
	4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas of Residential Buildings: ≤ 0.5 gpm @ 60 psi
	4.303.1.4.3 Metering Faucets: ≤ 0.25 gallons per cycle
4.303.1.4.4 Kitchen Faucets: ≤ 1.8 gpm @ 60 psi; temporary increase to 2.2 gpm allowed but shall default to 1.8 gpm	
Standards for plumbing fixtures and fittings	
4.303.2	Plumbing fixtures and fittings shall be installed in accordance with the California Plumbing Code, and shall meet applicable standards referenced in Table 1701.1 of the California Plumbing Code.
Division 4.3 – WATER EFFICIENCY AND CONSERVATION (OUTDOOR WATER USE)	
Outdoor potable water use in landscape areas	
4.304.1	After December 1, 2015, new residential developments with an aggregate landscape area equal to or greater than 500 square feet shall comply with one of the following:
	<ol style="list-style-type: none"> 1. A local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent, or 2. Projects with aggregate landscape areas less than 2500 square feet may comply with the MWELO's Appendix D Prescriptive Compliance Option.
Division 4.4 – MATERIAL CONSERVATION & RESOURCE EFFICIENCY (ENHANCED DURABILITY & REDUCED MAINTENANCE)	
Rodent proofing	
4.406.1	Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be closed with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency to prevent passage of rodents.
Division 4.4 – MATERIAL CONSERVATION & RESOURCE EFFICIENCY (CONSTRUCTION WASTE REDUCTION, DISPOSAL & RECYCLING)	
Construction waste reduction of at least 65%	
4.408.1	<ul style="list-style-type: none"> • Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4; OR meet a more stringent local construction and demolition waste management ordinance.



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SECTION	REQUIREMENTS
4.408.1 continued	<ul style="list-style-type: none"> • Documentation is required per Section 4.408.5. <p>Exceptions:</p> <ol style="list-style-type: none"> 1. Excavated soil and land-clearing debris. 2. Alternative waste reduction methods developed by working with local enforcing agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite. 3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.
4.408.2	<p>Construction waste management plan</p>
	Submit a construction waste management plan meeting Items 1 through 5 in Section 4.408.2. Plans shall be updated as necessary and shall be available for examination during construction.
4.408.3	<p>Waste management company</p>
	Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that diverted construction and demolition waste materials meet the requirements in Section 4.408.1.
4.408.4 4.408.4.1	<p>Waste stream reduction alternative</p>
	<ul style="list-style-type: none"> • (LR) Projects that generate a total combined weight of construction and demolition waste disposed in landfills, which do not exceed 3.4 pounds per square foot of the building area shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1. • Projects that generate a total combined weight of construction and demolition waste disposed in landfills, which do not exceed 2 pounds per square foot of the building area, shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1.
Division 4.4 – MATERIAL CONSERVATION & RESOURCE EFFICIENCY (BUILDING MAINTENANCE & OPERATION)	
4.410.1	<p>Operation and maintenance manual</p>
	At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which covers 10 specific subject areas shall be placed in the building.
4.410.2	<p>Recycling by occupants</p>
	Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and is identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive. Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code Section 42649.82 (a)(2)(A) et. seq. are not required to comply with the organic waste portion of this section.



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SECTION	REQUIREMENTS
Division 4.5 – ENVIRONMENTAL QUALITY (FIREPLACES)	
	General
4.503.1	Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves, pellet stoves and fireplaces shall also comply with all applicable local ordinances.
Division 4.5 – ENVIRONMENTAL QUALITY (POLLUTANT CONTROL)	
	Protection during construction
4.504.1	At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air intake and distribution component openings shall be covered. Tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of water, dust and debris entering the system may be used.
	Adhesives, sealants and caulks
4.504.2.1	<p>Adhesives, sealants and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:</p> <ol style="list-style-type: none"> 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 district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 4.504.1 or 4.504.2, as applicable. Such products shall also comply with 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. 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 1 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 the California Code of Regulations (CCR), Title 17, commencing with Section 94507.
	Paints and coatings
4.504.2.2	<p>Architectural paints and coatings shall comply with VOC limits in Table 1 of the Air Resources Board Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local limits apply.</p> <p>The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as 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 4.504.3 shall apply.</p>



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4.504.2.3	Aerosol paints and coatings
	Aerosol paints and coatings shall meet the Product-Weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Section 94522(e)(1) and (f)(1) of the CCR, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District shall additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.
4.504.3	Carpet systems
	Carpet installed in the building interior shall meet the testing and product requirements of 1 of the following: 1. Carpet and Rug Institute's Green Label Plus Program 2. California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350) 3. NSF/ANSI 140 at the Gold level 4. Scientific Certifications Systems Indoor Advantage™ Gold
4.504.3.1	Carpet cushion
	Carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label Plus Program.
4.504.3.2	Carpet adhesive
	Carpet adhesives shall meet the requirements of Table 4.504.1.
4.504.4	Resilient flooring systems
	Where resilient flooring is installed, at least 80% of floor area receiving resilient flooring shall comply with one or more of the following: 1. Products compliant with the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database 2. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children & Schools Program) 3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program 4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350)
4.504.5	Composite wood products
	<ul style="list-style-type: none"> Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements



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4.504.5 continued	<p>for formaldehyde as specified in the Air Resources Board's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et. seq.), as shown in Table 4.504.5. Documentation is required per Section 4.504.5.1.</p> <ul style="list-style-type: none"> Definition of Composite Wood Products: Composite wood products include hardwood plywood, particleboard, and medium density fiberboard. "Composite wood products" do not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists, or finger-joined lumber, all as specified in CCR, Title 17, Section 93120.1(a).
4.504.5.1	<p>Documentation</p>
	Verification of compliance shall be provided as requested by the enforcing agency, and as required in Section 4.504.5.1.
Division 4.5 – ENVIRONMENTAL QUALITY (INTERIOR MOISTURE CONTROL)	
	<p>Concrete slab foundations</p>
4.505.2	Concrete slab foundations or concrete slab-on-ground floors required to have a vapor retarder by the California Building Code, Chapter 19, or the California Residential Code, Chapter 5, respectively, shall also comply with this section.
	<p>Capillary break</p>
4.505.2.1	<p>A capillary break shall be installed in compliance with at least 1 of the following:</p> <ol style="list-style-type: none"> A 4-inch thick base of 1/2-inch or larger clean aggregate shall be provided with a vapor retarder in direct contact with concrete and a concrete mix design which will address bleeding, shrinkage and curling shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06. Other equivalent methods approved by the enforcing agency. A slab design specified by a licensed design professional.
	<p>Moisture content of building materials</p>
4.505.3	<p>Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19% moisture content. Moisture content shall be verified in compliance with the following:</p> <ol style="list-style-type: none"> Moisture content shall be determined with either a probe-type or a contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements in Section 101.8. Moisture readings shall be taken at a point 2 feet to 4 feet from the grade-stamped end of each piece to be verified. At least 3 random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing. <p>Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Manufacturers' drying recommendations shall be followed for wet-applied insulation products prior to enclosure.</p>



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Division 4.5 – ENVIRONMENTAL QUALITY (INDOOR AIR QUALITY & EXHAUST)	
Bathroom exhaust fans	
4.506.1	<p>Each bathroom shall be mechanically ventilated and shall comply with the following:</p> <ol style="list-style-type: none"> 1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building. 2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control. <ol style="list-style-type: none"> a) Humidity controls shall be capable of manual or automatic adjustment between a relative humidity range of less than 50% to a maximum of 80%. b) A humidity control may be a separate component to the exhaust fan and is not required to be integral or built-in. <p>Note: For CALGreen a “bathroom” is a room which contains a bathtub, shower, or tub/shower combination. Fans or mechanical ventilation is required in each bathroom.</p>
Division 4.5 – ENVIRONMENTAL QUALITY (ENVIRONMENTAL COMFORT)	
Heating and air conditioning system design	
4.507.2	<p>Heating and air conditioning systems shall be sized, designed, and equipment selected using the following methods:</p> <ol style="list-style-type: none"> 1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J – 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods. 2. Duct systems are sized according to ANSI/ACCA 1 Manual D – 2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods. 3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S – 2014 (Residential Equipment Selection) or other equivalent design software or methods. <p>Exception: Use of alternate design temperatures necessary to ensure the systems functions are acceptable.</p>
CHAPTER 7 – INSTALLER & SPECIAL INSPECTOR QUALIFICATION (QUALIFICATIONS, VERIFICATIONS)	
Installer training	
702.1	<p>HVAC system installers shall be trained and certified in the proper installation of HVAC systems and equipment by a recognized training or certification program. Examples of acceptable HVAC training and certification programs include but are not limited to the following:</p> <ol style="list-style-type: none"> 1. State certified apprenticeship programs. 2. Public utility training programs. 3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations. 4. Programs sponsored by manufacturing organizations. 5. Other programs acceptable to the enforcing agency.



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	Special inspection
702.2	Special inspectors must be qualified and able to demonstrate competence to the enforcing agency in the discipline in which they are inspecting.
	Documentation
703.1	Documentation of compliance shall include, but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the local enforcing agency. Other specific documentation or special inspections necessary to verify compliance are specified in appropriate sections of CALGreen.