

City & County of San Francisco Green Codes Comparison - Line by Line Correlation for Non-Residential Occupancies

WORKING DRAFT 6-May-10

LEED BD&C 2009		
Credit	Item	Requirement
Sustainable Sites		
SSp1	Construction Activity Pollution Prevention	Create and implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project. The ESC Plan shall conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit OR local erosion and sedimentation control standards and codes, whichever is more stringent. The Plan shall describe the measures implemented to accomplish the following objectives: <ul style="list-style-type: none"> Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse. Prevent sedimentation of storm sewer or receiving streams. Prevent polluting the air with dust and particulate matter.
SSc1	Site Selection	Do not develop buildings, hardscape, roads or parking areas on portions of sites that meet any one of the following criteria: <ul style="list-style-type: none"> Prime farmland Previously undeveloped land whose elevation is lower than 5 feet above the elevation of the 100-year flood as defined by FEMA Habitat for any species on Federal or State threatened or endangered lists Within 100 feet of any wetlands or within setback distances from wetlands prescribed in state or local regulations, whichever is more stringent.
SSc2	Development Density and Community Connectivity	Construct or renovate building on a previously developed site and in a community with a minimum density of 60,000 square feet per acre net OR Construct or renovate building on a previously developed site AND within 1/2 mile of a residential zone or neighborhood with an average density of 10 units per acre net AND within 1/2 mile of at least 10 Basic Services AND with pedestrian access between the building and the services.
SSc3	Brownfield Redevelopment	Develop on a site documented as contaminated or defined as a brownfield by a local, state or federal government agency.
SSc4.1	Public Transportation Access	Locate project within 1/2 mile walking distance of an existing—or planned and funded—commuter rail, light rail or subway station or within 1/4 mile walking distance of one or more stops for two or more public, campus, or private bus lines usable by building occupants
SSc4.2	Bicycle Storage & Changing Rooms	Provide secure bicycle racks and/or storage for 5% or more of all building users, within 200 yards of a building entrance. Provide shower and changing facilities in the building, or within 200 yards of a building entrance, for 0.5% of Full-Time Equivalent (FTE) occupants For residential buildings, provide covered storage facilities for securing bicycles for 15% or more of building occupants in lieu of changing/shower facilities.

Current Codes (predating CalGreen)				
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement
NPDES Phase II General Permits Separate Storm Sewer and for construction activity discharges; SF Public Works Code Pt. II, Chap 10 Article 4.1.40GF Section 403. (Also, LEED Prerequisites are required under SF Building Code Chapter 13C: Green	100%	SSp1	Construction Activity Pollution Prevention	Construction projects in San Francisco must implement Best Management Practices to reduce runoff to sewer and receiving water bodies. In a separate sewer area , projects clearing, grading, stockpiling, or excavating >1 acre, or part of larger projects disturbing >1 acre, must prepare and implement a Stormwater Pollution Prevention Plan (SWPPP.) See SFWater.org for details. In a combined sewer area , local code requires stormwater BMPs to prevent discharge into the combined sewer. See SFWater.org for details. Local SWPPP and dust control plan requirements (SFMC Article 22B and SFBC 106.3.2.6.3 - noted below) meet the LEED SSp1 prerequisite.
SF Municipal Code (SFMC) Article 22B and SFBC 106.3.2.6.3	N/A		Construction Dust Control Requirements	Provide dust mitigation map for projects >1/2 acre in size identifying all nearby residences, schools, childcare, health care, and group living facilities. Projects within 1,000 feet of such sensitive receptors must provide a plan to minimize visible dust. Dust mitigation plan shall contain all provisions of Section 106.3.2.6.3 of the Building Code.
	88%			
	60%			
	48%			
	96%			
SF Planning Code 155.1 through 155.5	84%		Bicycle requirements	New commercial buildings and major renovations are required to provide bicycle parking, showers, and clothes locker facilities. Update to local requirements appears necessary.

CALGreen 2010 - Commercial			
Section	Item	Requirement	Weighting
Planning and Design			
5.106.1	Storm water pollution prevention plan	For newly constructed projects of less than one acre , develop a Storm Water Pollution Prevention Plan (SWPPP) that has been designed, specific to its site, conforming to the State Storm water NPDES Construction Permit or local ordinance, whichever is stricter, as is required for projects one acre or more. The plan should cover prevention of soil loss by storm water run-off and/or wind erosion, of sedimentation, and/or of dust/particulate matter air pollution.	REQUIRED
5.106.4	Bicycle parking and changing rooms.	If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 100 feet 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. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5% of motorized vehicle parking capacity, with a minimum of one space. Follow above or meet local ordinance or the University of California Policy on Sustainable Practices, whichever is stricter.	REQUIRED

LEED BD&C 2009		
Legend		
	Mandatory or LEED Prerequisite	
	Elective measure in code or credit in LEED	
	Not included in LEED and in CALGreen Commercial	
	Not included in LEED but only in CALGreen Residential or ASHRAE 189.1	
Credit	Item	Requirement
SSc7.1	Heat Island Effect: Non-Roof	Use any combination of the following strategies for 50% of the site hardscape: <ul style="list-style-type: none"> shade from tree canopy shade from structures fully covered by solar photovoltaic panels. shade from structures that have a solar reflectance index (SRI) of at least 29. paving materials with an SRI of at least 29. open-grid pavement system (at least 50% pervious). OR place a minimum of 50% of parking spaces under cover
SSc7.2	Heat Island Effect: Roof	Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than 78 for low-sloped roof or 29 for steep sloped roof (slope >2:12) for a minimum of 75% of the roof surface. If more than 75% of the roof area is covered with the SRI material, the SRI value may be lower than the required value if the resulting area-weighted equivalent SRI performance is at least as high as having the required value on 75% of the area. OR Install a "green" (vegetated) roof for at least 50% of the roof area, OR Install high albedo and vegetated roof surfaces that, in combination, meet the following criteria: (Area of SRI Roof/0.75) + (Area of vegetated roof /0.5) <=
SSc8	Light Pollution Reduction	Interior: Reduce the input power by automatic device of all non-emergency interior luminaires with the direct line of sight to any opening in the envelope (translucent or transparent) by at least 50% between 11 PM and 5 AM. OR All openings in the envelope with a direct line of sight to any non-emergency lighting must have shielding controlled/closed by automatic device for a resultant transmittance of less than 10% between 11 PM and 5 AM). Exterior: Light areas only as required for safety and comfort. Lighting power densities must not exceed ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) for the classified zone LZ1-LZ4.
Water Efficiency		
WEp1	Water Use Reduction	Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation). Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closest, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.
	Multiple showerheads serving one shower	
	Meters	LEED 2009 Minimum Program Requirements include "sharing all available actual whole-project energy and water usage data;" this encourages but does not clearly require water meters to be installed. Exception is specifically granted "where cost-prohibitive or physically impractical to install." Meter requirement may be addressed in future versions of LEED.
WEc1	Water Efficient Landscaping	Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case. Reductions shall be attributed to any combination of the following items: <ul style="list-style-type: none"> Plant species factor Irrigation efficiency Use of captured rainwater Use of recycled wastewater Use of water treated and conveyed by a public agency specifically for non-potable uses.
		100% Reduction
	Sprinklers	
	Meters	

Current Codes (predating CalGreen)			
Legend			
	Equivalent or greater requirement already in effect		
	Confirmation pending about existing requirements, such as Planning and Health codes		
	No existing requirement, and not a CalGreen mandatory measure.		
	Stricter or new measure required under CalGreen		
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item Requirement
	72%		
2008 Title 24 Energy Standards	88%		Cool Roofs Nonresidential buildings with low-sloped roofs in climate zones 2-15 shall have a minimum 3-year aged solar reflectance of 0.55 and a minimum thermal emittance of 0.75, or a minimum aged SRI of 64. Exceptions for: - High-mass (>25 lb/ft2) roof assemblies (including green roofs) - Areas covered by photovoltaics - Wood framed roof assemblies with U-factor <0.039 in climate zone 3 (San Francisco) and 5 - Metal framed roof assembly with U-factor <0.048 in climate zone 3 (San Francisco) and 5 Separate lower thresholds apply to nonresidential steep-sloped roofs <5 lbs/ft2 (minimum 3-year aged solar reflectance of
	52%	SSc8	Light Pollution Reduction Interior: Reduce the input power by automatic device of all non-emergency interior luminaires with the direct line of sight to any opening in the envelope (translucent or transparent) by at least 50% between 11 PM and 5 AM. OR All openings in the envelope with a direct line of sight to any non-emergency lighting must have shielding controlled/closed by automatic device for a resultant transmittance of less than 10% between 11 PM and 5 AM). Exterior: Light areas only as required for safety and comfort. Lighting power densities must not exceed ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) for the classified zone LZ1-LZ4.
Water Efficiency			
LEED Prerequisite criteria are required under San Francisco Building Code (SFBC) Chapter 13: Green Building Ordinance	100%	WEp1	Water Use Reduction Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation). Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closest, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves.
	n/a		
	n/a		
WE c1 is elective in the LEED Rating System, but has been required by SF GBO since Nov 2008	92%	WEc1	Water Efficient Landscaping Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case. Reductions shall be attributed to any combination of the following items: <ul style="list-style-type: none"> Plant species factor Irrigation efficiency Use of captured rainwater Use of recycled wastewater Use of water treated and conveyed by a public agency specifically for non-potable uses.
	24%		
Confirm that Water Efficient Landscape Ordinance under development includes these criteria	n/a		
	n/a		

CALGreen 2010 - Commercial			
Legend			
	CalGreen requirement		
	CalGreen Tier 1 or 2 enhancement; may be adopted by local jurisdictions		
	No CalGreen requirement		
Section	Item	Requirement	Weighting
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: <ol style="list-style-type: none"> Shield all exterior luminaires or provide cutoff luminaires per Section 132 (b) of the California Energy Code. Contain interior lighting within each source. Allow no more than .01 horizontal lumen footcandles to escape 15 feet beyond the site boundary. Automatically control exterior lighting dusk to dawn to turn 	
Water Efficiency & Conservation			
5.303.2	Indoor Water Use: 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... demonstrated by one of the following methods: <ol style="list-style-type: none"> Each fixture meets reduced flow rates per Table 5.303.2.3 Calculation demonstrating building 'water use' reduction per Table 5.303.2.2 	REQUIRED
5.303.2.1	Multiple showerheads serving one shower	When a single shower is served by more than one showerhead, the combined flow rate shall not exceed the maximum flow rate specified or the shower shall be designed to only allow one shower to operate at a time.	REQUIRED
5.303.1	Meters	Separate Meters shall be provided for the following: <ol style="list-style-type: none"> For each individual leased, rented, or other tenant space over 50,000 sq ft or projected to consume over 1,000 gal/day. For spaces used for laundry or cleaners, restaurant or food service. Medical or dental office, laboratory, beauty salon or barber shop projected to consume over 100 gal/day 	REQUIRED
5.304.1	Outdoor Water Use: Water Budget	A water budget shall be developed for landscape irrigation conforming to local water eff. Landscape ordinance or CA Dept of Water Resources Model Water Efficient Landscape Ordinance	REQUIRED
A5.304.4		Reduce the use of potable water to a quantity that does not exceed 60% of ETo times landscape area.	TIER 1
		Reduce the use of potable water to a quantity that does not exceed 55% of ETo times landscape area	TIER 2
5.407.2.1	Sprinklers	Design and maintain landscape irrigation systems to prevent spray on structures.	
5.304.2	Meters	For new services with landscape areas between 1000 and 5000 SF separate meters shall be installed for indoor and outdoor potable water use	REQUIRED

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Legend	<ul style="list-style-type: none"> Mandatory or LEED Prerequisite Elective measure in code or credit in LEED Not included in LEED and in CALGreen Commercial Not included in LEED but only in CALGreen Residential or ASHRAE 189.1
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Credit	Item	Requirement
	Irrigation Controllers	
WEc2	Innovative Waste Water	OPTION 1: Reduce potable water use for building sewage conveyance by 50% through the use of water conserving fixtures (water closets, urinals) or non-potable water (captured rainwater, recycled graywater, and on-site or municipally treated wastewater). OR OPTION 2: Treat 50% of wastewater on-site to tertiary standards. Treated water must be infiltrated or used on-site.
WEc3	Water Use Reduction	Employ strategies that in aggregate use less water than the water use baseline calculated for the building (not including irrigation). Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves. 30% 40% 50% (Innovation credit)

Energy and Atmosphere

EAp1	Fundamental Commissioning of the Building Energy Systems	1) Designate an individual as the Commissioning Authority (CxA) to lead, review, and oversee the completion of the commissioning process activities. 2) The Owner shall document the Owner's Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CxA must review these documents for clarity and completeness. 3) Develop and incorporate commissioning requirements into the construction documents. 4) Develop and implement a commissioning plan. 5) Verify the installation and performance of the systems to be commissioned. 6) Complete a summary commissioning report. Commissioning process activities shall be completed for the following energy related systems, at a minimum: • Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls • Lighting and daylighting controls • Domestic hot water systems
EAp2	Minimum Energy Performance	Demonstrate a 10% improvement in the proposed building performance rating for new buildings, or a 5% improvement in the proposed building performance rating for major renovations to existing building, compared with the baseline building performance rating. Calculate the baseline building performance rating according to the building performance rating method in Appendix G of ASHRAE Standard 90.1-2007 (with errata but without addenda) or California Title 24-2005, Part 6 using a computer simulation model for the whole building project. For small buildings, alternative compliance paths include using the ASHRAE Advanced Energy Design Guides or the Advanced Building Core Performance Guide developed by the New Buildings Institute.
EAp3	Fundamental Refrigerant Management	Zero use of CFC-based refrigerants in new building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phase-out conversion prior to project completion.
EAc1	Optimize Energy Performance	Demonstrate a percentage improvement in the proposed building performance rating compared with the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda) using a computer simulation model for the whole building project. 15% Savings (New Buildings) 30% Savings (New Buildings)
EAc2	Renewable Energy	Use on-site renewable energy systems to offset building energy cost. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building annual energy cost and use the table below to determine the number of points achieved

Current Codes (predating CalGreen)

				<ul style="list-style-type: none"> Equivalent or greater requirement already in effect Confirmation pending about existing requirements, such as Planning and Health codes No existing requirement, and not a CalGreen mandatory measure. Stricter or new measure required under CalGreen
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Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement
	part of WEc1.1			Irrigation controllers are one of several options to document water savings to meet the WE c1 threshold of 50% landscape irrigation reduction, which is required by Chapter 13C.
CalGreen performance criteria met by existing LEED WEP1 prerequisite and upcoming WEc3 requirement	16%	WEp1		CalGreen wastewater reduction measure summarizes the expected benefit of CGBS 5.303.2. 5.303.4 does not include an additional enforceable measure beyond 5.302.2 and 5.303.3.
WE c3 is elective in the LEED Rating System, but will be required by SF GBO beginning Jan 2011	80% (Data pre-dates local green building requirements) 68%	WEc3	Water Use Reduction	Employ strategies that in aggregate use 30% less water than the water use baseline calculated for the building (not including irrigation). Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closets, urinals, lavatory faucets, showers, kitchen sink faucets and pre-rinse spray valves. 30%

Energy and Atmosphere

LEED Prerequisite criteria are required under San Francisco Building Code (SFBC) Chapter 13: Green Building Ordinance	100%	EAp1	Fundamental Commissioning of the Building Energy Systems	1) Designate an individual as the Commissioning Authority (CxA) to lead, review, and oversee the completion of the commissioning process activities. 2) The Owner shall document the Owner's Project Requirements (OPR). The design team shall develop the Basis of Design (BOD). The CxA must review these documents for clarity and completeness. 3) Develop and incorporate commissioning requirements into the construction documents. 4) Develop and implement a commissioning plan. 5) Verify the installation and performance of the systems to be commissioned. 6) Complete a summary commissioning report. Commissioning process activities shall be completed for the following energy related systems, at a minimum: • Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls • Lighting and daylighting controls • Domestic hot water systems
LEED Prerequisite criteria are required under San Francisco Building Code (SFBC) Chapter 13: Green Building Ordinance	100%	EAp2	Minimum Energy Performance	All projects are required to: a) Submit standard Title 24 documentation of compliance with California energy standards, and b) Submit documentation to demonstrate that the proposed building meets LEED 2009 Minimum Energy Performance prerequisite (EAp2)
U.S. Clean Air Act of 1990, Title VI, Section 608	100%			CFC containing equipment has not allowed to be manufactured or sold in U.S for many years. As written, this measure is irrelevant to new construction. (HCFC's are another matter, though regulated by California Air Resources Board under
	80%			
	52%			
	0%			
	36%			

CALGreen 2010 - Commercial

			<ul style="list-style-type: none"> CalGreen requirement CalGreen Tier 1 or 2 enhancement; may be adopted by local jurisdictions No CalGreen requirement
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Section	Item	Requirement	Weighting
5.304.3	Irrigation Controller	Provide weather or soil moisture based controllers that automatically adjust in response to plants' needs as weather conditions change	REQUIRED
5.303.4	Wastewater Reduction	Each building Shall reduce by 20% wastewater by one of the following methods: 1. Installation of water-conserving fixtures meeting the criteria established in 5.303.2. or 5.303.3 or 2. Utilizing non-potable water systems	REQUIRED
5.303.2	Water Use Reduction	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.	
A5.303.2		30% Savings 35% Savings	TIER 1 TIER 2

Energy Efficiency

5.410.2	Commissioning	For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel with experience on projects of comparable size and complexity. Commissioning requirements shall include: 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. 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.	REQUIRED
5.201	Energy Efficiency	For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards. Note: It is the intent of this code to encourage buildings to achieve exemplary performance in the area of energy efficiency. For the purposes of energy efficiency standards, the California Energy Commission believes specifically, a green building should achieve at least a 15% reduction in energy usage when compared to the State's mandatory energy efficiency standards.	N/A
5.508.1.1	(CFCs)	Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.	REQUIRED
A5.203.1	Energy performance	Using an Alternative Calculation Method approved by the California Energy Commission, calculate each nonresidential building's TDV energy and CO2 emissions, and compare it to the standard or "budget" building based on the California Energy Code 2008 Energy Efficiency Standards. 15% Savings 30% Savings	TIER 1 TIER 2

LEED BD&C 2009		
Credit	Item	Requirement
Legend Mandatory or LEED Prerequisite Elective measure in code or credit in LEED Not included in LEED and in CALGreen Commercial Not included in LEED but only in CALGreen Residential or ASHRAE 189.1		
EAc3	Enhanced Commissioning	1. Prior to the start of the construction documents phase, designate an independent Commissioning Authority (CxA) to lead, review, and oversee the completion of all commissioning process activities. 2. The CA shall conduct, at a minimum, one commissioning design review of the Owner's Project Requirements (OPR), Basis of Design (BOD), and design documents prior to mid-construction documents phase and back-check the review comments following design submission. 3. The CA shall review contractor submittals applicable to systems being commissioned for compliance with the OPR and BOD. 4. Develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems. 5. Verify that the requirements for training operating personnel and building occupants are completed. 6. The CxA must be involved in reviewing the operation of the building with operations and maintenance staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues must be included.
EAc4	Enhanced Refrigerant Management	OPTION 1: Do not use refrigerants. OR OPTION 2: Select refrigerants and HVAC&R that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The base building HVAC&R equipment shall comply with the following formula, which set a maximum threshold for the combined contributions to ozone depletion and global warming potential: $LCGWP + LCODP \times 105 \leq 100$ ALL OPTIONS: Do not operate or install fire suppression systems that contain ozone-depleting substances such as CFCs, HCFCs, or halons.
EAc5	Measurement & Verification	Develop and implement a measurement and verification (M&V) plan consistent with Option B or Option D of the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003. The M&V period must cover at least 1 year of post-construction occupancy. Provide a process for corrective action if the results of the M&V plan indicate that energy savings are not being achieved.
EAc6	Green Power	Engage in at least a 2-year renewable energy contract to provide at least 35% of the building's electricity from renewable sources, as defined by the Center for Resource Solutions' Green-e Energy product certification requirements.
Materials & Resources		
MRp1	Storage & Collection of Recyclables	Provide an easily-accessible dedicated area or for the collection of storage materials for recycling for the entire building. Materials must include at minimum paper, corrugated cardboard, glass, plastics and metals.
MRC1.1	Building Reuse - Maintain Existing Walls, Floors, and Roof	Maintain at least 55% (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material).
MRC1.2	Building Reuse - Maintain Interior Nonstructural Elements	Using existing interior nonstructural elements (e.g., interior walls, doors, floor coverings and ceiling systems in at least 50% (by area) of the completed building, including additions.

Current Codes (predating CalGreen)					
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement	Recommended Update for Large Commercial (>25k sq ft, B & M occupancies)
EA c3 is elective in the LEED Rating System, but required by SF GBO as of Jan 2010. EA c3 commissioning is substantially more thorough and representative of independent review than CalGreen mandatory measure.	64% (LEED credit frequency data pre-date adoption of local green building requirements)	EAc3	Enhanced Commissioning	1. Prior to the start of the construction documents phase, designate an independent Commissioning Authority (CxA) to lead, review, and oversee the completion of all commissioning process activities. 2. The CA shall conduct, at a minimum, one commissioning design review of the Owner's Project Requirements (OPR), Basis of Design (BOD), and design documents prior to mid-construction documents phase and back-check the review comments following design submission. 3. The CA shall review contractor submittals applicable to systems being commissioned for compliance with the OPR and BOD. 4. Develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems. 5. Verify that the requirements for training operating personnel and building occupants are completed. 6. The CxA must be involved in reviewing the operation of the building with operations and maintenance staff and occupants within 10 months after substantial completion. A plan for resolving outstanding commissioning-related issues must be included.	Amend Chapter 13C to require EAc4
	84%	EAc4	Enhanced Refrigerant Management	OPTION 1: Do not use refrigerants. OR OPTION 2: Select refrigerants and HVAC&R that minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. The base building HVAC&R equipment shall comply with the following formula, which set a maximum threshold for the combined contributions to ozone depletion and global warming potential: $LCGWP + LCODP \times 105 \leq 100$ ALL OPTIONS: Do not operate or install fire suppression systems that contain ozone-depleting substances such as CFCs, HCFCs, or halons.	
	28%				
	52%				
Materials & Resources					
CA Solid Waste Reuse and Recycling Access Act of 1991, CIWMB Model Ordinance 93-57 and SFBC Chapter 13C	100%	MRp1	Storage & Collection of Recyclables	Under state law, permits may not be issued for any new public or private facility (among other projects) after July 1, 2005 unless adequate areas for collection and storage of all recyclable materials are provided. Due to enhanced local refuse collection services, space must be able to accommodate 100% of a facility's solid-waste materials. For details, see DBI Administrative Bulletin AB-088.	
	12%				
	0%				

CALGreen 2010 - Commercial				
Section	Item	Requirement	Weighting	
5.410.2.1, 5.410.2.2	Owner's Project Requirements, Basis of Design		REQUIRED	
5.410.2.5.1	Systems manual		REQUIRED	
5.410.2.5.2	Systems operations training		REQUIRED	
5.508.1.2	Halons	Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.		
Material Conservation and Resource Efficiency				
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.	REQUIRED	

LEED BD&C 2009		
Legend		
	Mandatory or LEED Prerequisite	
	Elective measure in code or credit in LEED	
	Not included in LEED and in CALGreen Commercial	
	Not included in LEED but only in CALGreen Residential or ASHRAE 189.1	
Credit	Item	Requirement
MRc2	Construction Waste Management	Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and whether the materials will be sorted on-site or comingled.
		75% Reduction
	Excavated soil and land clearing debris	Excavated soil and land-clearing debris do not contribute to this credit.
MRc3	Materials Reuse	Use salvaged, refurbished or reused materials, the sum of which constitutes at least 5% or 10%, based on cost, of the total value of materials on the project.
MRc4	Recycled Content	Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10%, based on cost, of the total value of the materials in the project.
		20% of total value
MRc5	Regional Materials	Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% or 20% (based on cost) of the total materials value.
MRc6	Rapidly Renewable Materials	Use rapidly renewable building materials and products for 2.5% of the total value of all building materials and products used in the project, based on cost. Rapidly renewable building materials and products are made from plants that are typically harvested within a 10-year or shorter cycle.
MRc7	Certified Wood	Use a minimum of 50% (by cost) of wood-based materials and products, certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for wood building components. The components include, but not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes.
	Weather protection	Required by code and good practice.
Indoor Environmental Quality		
EQp1	Minimum IAQ Performance	Mechanically Ventilated Spaces: meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2007, Ventilation for Acceptable Indoor Air Quality (with errata but without addenda). Mechanical ventilation systems must be designed using the Ventilation Rate Procedure or the applicable local code, whichever is more stringent. Naturally ventilated buildings must comply with ASHRAE 62.1-2007, paragraph 5.1 (with errata but without addenda).
EQp2	Environmental Tobacco Smoke (ETS) Control	Prohibit smoking in the building. Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property. Or provide designated smoking areas remote from building entries kept under negative pressure with direct air exhaust.

Current Codes (predating CalGreen)			
Legend			
	Equivalent or greater requirement already in effect		
	Confirmation pending about existing requirements, such as Planning and Health codes		
	No existing requirement, and not a CalGreen mandatory measure.		
	Stricter or new measure required under CalGreen		
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item Requirement
MR c2.2 is elective in the LEED Rating System, but required by SF GBO as of Jan 2010. SF Construction & Demolition Debris Ordinance (No.27-06) also applies.	92% (LEED credit frequency data pre-date adoption of local green building requirements)		SF GBO requires recycle or salvage of at least 75% of non-hazardous construction and demolition debris (MR c2.2.) Additionally, San Francisco Construction & Demolition Debris Ordinance requires 100% of mixed C&D debris to be transported by a registered hauler to a registered facility for maximum recovery of recyclable material from mixed debris. C&D material includes, but is not limited to, rock, soil, vegetative matter, asphalt, concrete, brick, lumber, gypsum wallboard, cardboard, packaging, roofing material, tile, carpeting fixtures, pipe, and metals. Exceptions are limited to refuse regulated under other codes, such as materials in the public right of way or hazardous materials as defined by CA
	80%		
SF Construction & Demolition Debris Ordinance (No.27-06)			Local C&D ordinance applies to 100% of non-hazardous material generated by construction and demolition activities, as listed above. Exceptions are limited to refuse regulated under other codes, such as materials in the public right of way or hazardous materials as defined by CA Health & Safety Code Section 25100 eq seq. .
	12%		
	80%	MR c4	
	33%		
	56%		
	4%		
	64%		
CBC Section 1403.2 California Energy Code Section 150,			As noted in CalGreen, a weather-resistant envelope is already mandatory.
Indoor Environmental Quality			
LEED Prerequisite criteria are required under San Francisco Building Code (SFBC) Chapter 13: Green Building Ordinance Also required by CCR Title 24 Pt 6.	100%	EQp1	Minimum IAQ Performance
			Mechanically Ventilated Spaces: meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2007, Ventilation for Acceptable Indoor Air Quality (with errata but without addenda). Mechanical ventilation systems must be designed using the Ventilation Rate Procedure or the applicable local code, whichever is more stringent. Naturally ventilated buildings must comply with ASHRAE 62.1-2007, paragraph 5.1 (with errata but without addenda).
LEED Prerequisite criteria are required under San Francisco Building Code (SFBC) Chapter 13: Green Building Ordinance	100%	EQp2	Environmental Tobacco Smoke (ETS) Control
			Prohibit smoking in the building. Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows. Provide signage to allow smoking in designated areas, prohibit smoking in designated areas or prohibit smoking on the entire property. Or provide designated smoking areas remote from building entries kept under negative pressure with direct air exhaust.

CALGreen 2010 - Commercial			
Legend			
	CalGreen requirement		
	CalGreen Tier 1 or 2 enhancement; may be adopted by local jurisdictions		
	No CalGreen requirement		
Section	Item	Requirement	Weighting
5.408.3	Construction waste reduction, disposal and recycling	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.	REQUIRED
A5.408.3.1		65% Reduction	TIER 1
		80% Reduction	TIER 2
5.408.4	Excavated soil and land clearing debris	100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.	REQUIRED
A5.405.4	Recycled content	Use materials, equivalent in performance to virgin materials, with post-consumer or preconsumer recycled content value (RCV) equaling at least 10% of the total value, based on estimated cost of materials on the project.	TIER 1
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	REQUIRED
Environmental Quality			
5.506.1	Outside air delivery	For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 (Requirements For Ventilation) of the California Energy Code, CCR, Title 24, Part 6, or the applicable local code, whichever is more stringent, and Chapter 4 of CCR, Title 8.	REQUIRED
5.504.7	Environmental tobacco smoke (ETS) control	Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and in buildings; or as enforced by ordinances, regulations, or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations, or policies are not in place, post signage to inform building occupants of the prohibitions	REQUIRED

LEED BD&C 2009		
Credit	Item	Requirement
		Residential and hotel: Prohibit smoking in all common areas of the building and near entries etc., weatherstrip and air-seal perimeter of all units and do air leakage testing per California 2001 Energy Efficiency Standards Chapter 4.
EQc1	Outdoor Air Delivery Monitoring	Provide carbon dioxide monitors within all densely occupied spaces. For each mechanical ventilation system, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor airflow rate with an accuracy of plus or minus 15% of the design minimum outdoor air rate, as defined by ASHRAE 62.1- 2007. Configure all monitoring equipment to generate an alarm when the airflow values or carbon dioxide (CO2) levels vary by 10% or more from the design values via either a building automation system alarm to the building operator or a visual or audible alert to the building occupants. For naturally ventilated spaces: monitor CO2 concentrations within all naturally ventilated spaces. CO2 monitoring shall be located within the room between 3 feet and 6 feet above the floor. One CO2 sensor may be used to represent multiple spaces with connected natural airflow.
EQc2	Increased Ventilation	Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE Standard 62.1-2007 (with errata but without addenda) as determined by EQ Prerequisite 1. For naturally ventilated spaces: design natural ventilation systems for occupied spaces to meet the recommendations set forth in the Carbon Trust "Good Practice Guide 237" [1998].
EQc3.1	Construction IAQ Management: During Construction	Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows: • During 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, 2nd Edition 2007, ANSI-SMACNA 008-2008 (Chapter 3). • If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE 52.2-1999 (with errata but without addenda). Replace all filtration media immediately • Protect stored on-site or installed absorptive materials from moisture damage.
EQc3.2	Construction IAQ Management: Before Occupancy	Option 1: Flush Out After construction ends, prior to occupancy and with all interior finishes installed, install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60F and relative humidity no higher than 60%. OR Option 2: Air Testing Conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air. Demonstrate that the contaminant maximum concentrations listed in the LEED reference guide
EQc4.1	Low-Emitting Materials: Adhesives and Sealants	All adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements applicable to the project scope: • Adhesives, Sealants and Sealant Primers must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits are listed in reference guide and correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005. Note - Use of VOC budgets is an alternative compliance path that allows for specialty applications for which there is no low VOC. • Aerosol Adhesives must comply with Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

Current Codes (predating CalGreen)				
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement
				Residential and hotel: Prohibit smoking in all common areas of the building and near entries etc., weatherstrip and air-seal perimeter of all units and do air leakage testing per California 2001 Energy Efficiency Standards Chapter 4.
CEC Title 24, Part 6, Sec 121 as noted in CalGreen	64% (Not all buildings are equipped with demand control ventilation.)	EQc1		California Energy Code Title 24 Part 6, including Section 121 is already in effect
	28%	EQc2		
Propose amendment to local code	72%	EQc3.1	Construction IAQ Management: During Construction	Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows: • During 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, 2nd Edition 2007, ANSI-SMACNA 008-2008 (Chapter 3). • If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE 52.2-1999 (with errata but without addenda). Replace all filtration media immediately • Protect stored on-site or installed absorptive materials from moisture damage.
	64%			
Propose amendment to local code.	96%	EQc4.1	Low-Emitting Materials: Adhesives and Sealants	All adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements applicable to the project scope: • Adhesives, Sealants and Sealant Primers must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits are listed in reference guide and correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005. Note - Use of VOC budgets is an alternative compliance path that allows for specialty applications for which there is no low VOC. • Aerosol Adhesives must comply with Green Seal Standard for Commercial Adhesives GS-36 requirements in effect on October 19, 2000.

CALGreen 2010 - Commercial			
Section	Item	Requirement	Weighting
5.506.2	Carbon dioxide (CO2) monitoring	For buildings equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the current edition of the California Energy Code, CCR, Title 24, Part 6, Section 121(c).	REQUIRED
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.	REQUIRED
5.504.4.1	Adhesives, sealants, and caulks	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 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. 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 04507.	REQUIRED

LEED BD&C 2009

Legend	<ul style="list-style-type: none"> Mandatory or LEED Prerequisite Elective measure in code or credit in LEED Not included in LEED and in CALGreen Commercial Not included in LEED but only in CALGreen Residential or ASHRAE 189.1
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Credit	Item	Requirement
EQc4.2	Low-Emitting Materials: Paints and Coatings	<p>Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:</p> <ul style="list-style-type: none"> Architectural paints, coatings and primers applied to interior walls and ceilings: Do not exceed the VOC content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993. <ul style="list-style-type: none"> Flats: 50 g/L Non-Flats: 150 g/L Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Do not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997. Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: Do not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004. <ul style="list-style-type: none"> Clear wood finishes: varnish 350 g/L; lacquer 550 g/L Floor coatings: 100 g/L Sealers: waterproofing sealers 250 g/L; sanding sealers 275 g/L; all other sealers 200 g/L Shellacs: Clear 730 g/L; pigmented 550 g/L Stains: 250 g/L
	Aerosol Paints and Coatings	current LEED CIRs exclude aerosol paints because they are not covered by SCAQMD rule 1113 or GS-11.
EQc4.3	Low-Emitting Materials: Flooring Systems	<p>OPTION 1: All carpet installed in the building interior shall meet the testing and product requirements of the Carpet and Rug Institute's Green Label Plus program.</p> <p>All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</p> <p>All carpet adhesive shall meet the requirements of EQ Credit 4.1: VOC limit of 50 g/L.</p> <p>100% of the hard surface flooring must be certified as compliant with the FloorScore standard (current as of the date of this Rating System, or more stringent version) by an independent third party. Flooring products covered by FloorScore include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, wall base, and associated sundries.</p> <p>Concrete, wood, bamboo, and cork floor finishes such as sealer, stain and finish must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004. VOC limits are listed in the Reference Guide.</p> <p>OPTION 2: All flooring products will meet the testing and product requirements of the California Department of Health Services Standard Practice for The Testing Of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda (California 01350).</p>
	Thermal Insulation	
EQc4.4	Low-Emitting Materials: Composite Wood & Agrifiber Products	<p>Composite wood and agrifiber products used on the interior of the building (defined as inside of the weather proofing system), must contain no added urea formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied assemblies shall contain no added urea-formaldehyde resins. Composite wood and agrifiber products are defined as: particleboard, Medium Density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fit-out, furniture, and equipment (FF&E) are not considered base building elements and are not</p>

Current Codes (predating CalGreen)

Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement
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Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement
Propose amendment to local code	96%	EQc4.2	Low-Emitting Materials: Paints and Coatings	<p>Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:</p> <ul style="list-style-type: none"> Architectural paints, coatings and primers applied to interior walls and ceilings: Do not exceed the VOC content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993. <ul style="list-style-type: none"> Flats: 50 g/L Non-Flats: 150 g/L Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Do not exceed the VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997. Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: Do not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004. <ul style="list-style-type: none"> Clear wood finishes: varnish 350 g/L; lacquer 550 g/L Floor coatings: 100 g/L Sealers: waterproofing sealers 250 g/L; sanding sealers 275 g/L; all other sealers 200 g/L Shellacs: Clear 730 g/L; pigmented 550 g/L Stains: 250 g/L
CCR Title 17 and BAAQMD Regulation 48 Rule 9 as listed in CalGreen				
Propose amendment to local code	88%	EQc4.3	Low-Emitting Materials: Flooring Systems	<p>OPTION 1: All carpet installed in the building interior shall meet the testing and product requirements of the Carpet and Rug Institute's Green Label Plus program.</p> <p>All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.</p> <p>All carpet adhesive shall meet the requirements of EQ Credit 4.1: VOC limit of 50 g/L.</p> <p>100% of the hard surface flooring must be certified as compliant with the FloorScore standard (current as of the date of this Rating System, or more stringent version) by an independent third party. Flooring products covered by FloorScore include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, wall base, and associated sundries.</p> <p>Concrete, wood, bamboo, and cork floor finishes such as sealer, stain and finish must meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004. VOC limits are listed in the Reference Guide.</p> <p>OPTION 2: All flooring products will meet the testing and product requirements of the California Department of Health Services Standard Practice for The Testing Of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda (California 01350).</p>
Amendment to local code? CalGreen measure recapitulates existing ARB regulations (17 CCR 93120 et seq.)	68%	EQc4.4	Low-Emitting Materials: Composite Wood & Agrifiber Products	<p>Composite wood and agrifiber products used on the interior of the building (defined as inside of the weather proofing system), must contain no added urea formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied assemblies shall contain no added urea-formaldehyde resins. Composite wood and agrifiber products are defined as: particleboard, Medium Density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fit-out, furniture, and equipment (FF&E) are not considered base building elements and are not</p>

Recommended Update for Large Commercial (>25k sq ft, B & M occupancies)

Amend Chapter 13C to require EQc4.2.
Amend Chapter 13C to require EQc4.3.
Amend Chapter 13C to require EQc4.4

CALGreen 2010 - Commercial

Section	Item	Requirement	Weighting
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Section	Item	Requirement	Weighting
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.	REQUIRED
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 40.	REQUIRED
5.504.4.4	Carpet systems	All carpet installed in the building interior shall meet the testing and product requirements of one of the following: <ol style="list-style-type: none"> Carpet and Rug Institute's Green Label Plus Program California Department of Public Health Standard Practice for the testing of VOCs (Specification 01350) NSF/ANSI 140 at the Gold level Scientific Certifications Systems Sustainable Choice 	REQUIRED
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.	REQUIRED
5.504.4.4.2	Carpet adhesive	All carpet adhesive shall meet the requirements of Table 5.504.4.1. (VOC limit of 50 g/L)	REQUIRED
5.504.4.6	Resilient flooring systems	For 50% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List (or Product Registry) or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program.	REQUIRED
A504.4.7		80% of floor area meets CHPS or FloorScore	TIER 1
		100% of floor area meets CHPS or FloorScore	TIER 2
A5.504.4.8	Thermal Insulation	Comply with Chapter 12-13 in Title 24, Part 12 and with the VOC-emission limits defined in 2009 CHPS criteria and listed on its Low-emitting Materials List.	TIER 1
A5.504.4.8.1		Install No-Added Formaldehyde thermal insulation in addition to meeting A5.504.4.8.	TIER 2
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	REQUIRED

LEED BD&C 2009		
Legend Mandatory or LEED Prerequisite Elective measure in code or credit in LEED Not included in LEED and in CALGreen Commercial Not included in LEED but only in CALGreen Residential or ASHRAE 189.1		
Credit	Item	Requirement
	Documentation	LEED verification uses manufacturer's product specifications and/or MSDS information.
EQc5	Indoor Chemical and Pollutant Source Control	1. Employ permanent entryway systems at least 10 feet long in the primary direction of travel to capture dirt and particulates from entering the building at all entryways that are directly connected to the outdoors. 2. Where hazardous gases or chemicals may be present or used (including garages, housekeeping/laundry areas and copying/printing rooms), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed. For each of these spaces, provide self-closing doors and deck to deck partitions or a hard lid ceiling. 3. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media prior to occupancy that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better. Filtration should be applied to process both return and outside air that is to be delivered as supply air. 4. Provide containment drains plumbed for appropriate disposal of hazardous liquid wastes in places where water and chemical concentrate mixing occurs (e.g. housekeeping, janitorial and science laboratories).
EQc6.1	Controllability of Systems: Lighting	Provide individual lighting controls for 90% (minimum) of building occupants to enable adjustments to suit individual task needs and preferences. Provide lighting system controls for all shared multi-occupant spaces to enable adjustments that meet group needs and preferences.
EQc6.2	Controllability of Systems: Thermal Comfort	Provide individual comfort controls for 50% (minimum) of the building occupants to enable adjustments to suit individual task needs and preferences. Operable windows can be used in lieu of comfort controls for occupants of areas that are 20 feet inside of and 10 feet to either side of the operable part of the window. The areas of operable window must meet the requirements of ASHRAE 62.1-2007 paragraph 5.1 Natural Ventilation. AND Provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences. Conditions for thermal comfort are described in ASHRAE Standard 55-2004 to include the primary factors: of air temperature, radiant temperature, air speed, and humidity. Comfort system control for the purposes of this credit is defined as the provision of control over at least one of these primary factors in the occupant's local environment.
EQc7.1	Thermal Comfort: Design	Design HVAC systems and the building envelope to meet the requirements of ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy. Demonstrate design compliance in accordance with the Section 6.1.1 Documentation.
EQc7.2	Thermal Comfort: Verification	Achieve EQ 7.1 AND agree to conduct a thermal comfort survey of building occupants (adults and students of grades 6 and above) within 6 to 18 months after occupancy. This survey should collect anonymous responses about thermal comfort in the building, including an assessment of overall satisfaction with thermal performance and identification of thermal comfort problems. Agree to develop a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with thermal comfort of the building. This plan should include measurement of relevant environmental variables in problem areas in accordance with ASHRAE Standard 55-2004 (with errata but with addenda).

Current Codes (predating CalGreen)				
Frequency Achieved in Local LEED Projects Equivalent or greater requirement already in effect Confirmation pending about existing requirements, such as Planning and Health codes No existing requirement, and not a CalGreen mandatory measure. Stricter or new measure required under CalGreen				
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement
				Documentation requirements collected through LEED process if the relevant credits are pursued
	88%	EQc5	Indoor Chemical and Pollutant Source Control	1. Employ permanent entryway systems at least 10 feet long in the primary direction of travel to capture dirt and particulates from entering the building at all entryways that are directly connected to the outdoors. 2. Where hazardous gases or chemicals may be present or used (including garages, housekeeping/laundry areas and copying/printing rooms), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed. For each of these spaces, provide self-closing doors and deck to deck partitions or a hard lid ceiling. 3. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media prior to occupancy that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better. Filtration should be applied to process both return and outside air that is to be delivered as supply air. 4. Provide containment drains plumbed for appropriate disposal of hazardous liquid wastes in places where water and chemical concentrate mixing occurs (e.g. housekeeping, janitorial and science laboratories).
	64%			
	36%			
	80%			
	60%			

Recommended Update for Large Commercial (>25k sq ft, B & M occupancies)

Amend Chapter 13C to require EQc5. Allow 5.407.2.2 as alternate compliance path

Note: Tighter filtration in LEED standard (MERV 13) vs. CalGreen (MERV 8) enhances particulate removal, but affects fan energy

CALGreen 2010 - Commercial			
 CalGreen requirement CalGreen Tier 1 or 2 enhancement; may be adopted by local jurisdictions No CalGreen requirement			
Section	Item	Requirement	Weighting
5.504.4.3.2 (sim.), 5.504.4.5.2 (sim.), 5.504.4.6.1 (sim.)	Verification	Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following: 1. Manufacturers product specification. 2. Field verification of on-site product containers. 3. Chain of custody certificates. 4. Other methods acceptable to the enforcing agency.	At request of enforcing agency
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.	REQUIRED
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	REQUIRED

LEED BD&C 2009		
Credit	Item	Requirement
EQc8.1	Daylight	Achieve daylighting in 75% of regularly occupied spaces, demonstrated through any combination of: 1. Computer simulation showing daylight illuminance levels of a minimum of 25 footcandles (fc) and a maximum of 500 fc in a clear sky condition on September 21 at 9 am and 3 pm (designs that incorporate view-preserving automated shades for glare control may demonstrate compliance for only the minimum 25 fc illuminance level). 2. Manual calculation showing for sidelit areas that the product of the visible light transmittance (VLT) and window to floor area ratio (WFR) of daylight zone between the values of 0.150 and 0.180. Window area included in the calculation must be of the portion of the window at least 30" above the floor. For toplit areas achieve skylight roof coverage between 3% and 6% of the roof area with a minimum 0.5 VLT. 3. Indoor light measurements showing that a minimum daylight illumination level of 25 footcandles has been achieved in at least 75% of all regularly occupied areas. Measurements must be taken on a 10-foot grid for all occupied spaces and must be recorded on building floor plans.
EQc8.2	Views	Achieve direct line of sight to the outdoor environment via vision glazing between 30" and 90" above finish floor for building occupants in 90% of all regularly occupied areas. Determine the area with direct line of sight by totaling the regularly occupied square footage that meets the following criteria: • In plan view, the area is within sight lines drawn from the area to perimeter vision glazing. • In section view, a direct sight line can be drawn from the area to perimeter vision glazing. Line of sight may be drawn through interior glazing. For private offices, the entire square footage of the office can be counted if 75% or more of the area has direct line of sight to perimeter vision glazing. For multi-occupant spaces, the actual square footage with direct line of sight to perimeter vision glazing is counted.
	Fireplaces	
	Woodstoves	
	Indoor Moisture Control	
LEED - Schools	Acoustical control	
	Exterior noise transmission	
	Interior sound	

Current Codes (predating CalGreen)				Recommended Update for Large Commercial (>25k sq ft, B & M occupancies)	
Section/ Reference	Frequency Achieved in Local LEED Projects	Credit	Item	Requirement	
	48%				
	66%				
SFBC Ch 31.10 for residential Confirming with BAAQMD				Residential requirements already enforced in residential occupancies.	
Confirming with BAAQMD				EPA Phase II emission limits already apply.	
CBC Title 24 Pt 2 Section 1203 and Chapter 14 as noted in CalGreen				Recapitulates existing Ca Building Code.	
Propose amendment to local code					Enforce CalGreen section 5.507
Propose amendment to local code					
Propose amendment to local code					

CALGreen 2010 - Commercial			
Section	Item	Requirement	Weighting
5. 503.1	Fireplaces	Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed woodstove or pellet stove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150.	REQUIRED
5. 503.1.1	Woodstoves	Woodstoves and pellet stoves shall comply with US EPA Phase II emission limits.	REQUIRED
5. 505.1	Indoor Moisture Control	Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 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.	REQUIRED
5.507.4	Acoustical control	Employ building assemblies and components with Sound Transmission Coefficient (STC) values determined in accordance with ASTM E90 and ASTM E413.	
5.507.4.1	Exterior noise transmission	Wall and roof-ceiling assemblies making up the building envelope shall have an STC of at least 50, and exterior windows shall have a minimum STC of 30 for any of the following building locations: 1. Within 1000 ft. (300 m.) of right of ways of freeways. 2. Within 5 mi. (8 km.) of airports serving more than 10,000 commercial jets per year. 3. Where sound levels at the property line regularly exceed 65 decibels, other than occasional sound due to church bells, train horns, emergency vehicles and public warning systems.	
5.507.4.2	Interior sound	Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.	