

# 2013 CALGreen

## NONRESIDENTIAL MANDATORY MEASURES CHECKLIST

(Including supplement effective July 1, 2015)

SECTION	MEASURES	REQUIREMENTS	Measures provided on plan sheet:
<b>PLANNING AND DESIGN (Site Development)</b>			
5.106.1	Storm Water Pollution Prevention Plan	Newly constructed projects and additions which disturb less than one acre of land shall prevent the pollution of stormwater runoff from the construction activities through local ordinance in Section 5.106.1.1 or Best management practices (BMP) in Section 5.106.1.2	
5.106.4	Bicycle Parking	<p>Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet local ordinance, whichever is stricter.</p> <p><b>5.106.4.1.1 Short-Term bicycle parking.</b> If the new project or addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 ft of the visitors' entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack. <b>Exception:</b> Additions or alterations which add 9 or less visitor parking spaces.</p> <p><b>5.106.4.1.2 Long-Term bicycle parking.</b> For new buildings with over 10 tenant-occupants or for additions or alterations that add 10 or more tenant parking spaces, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking spaces being added, with a minimum of one space. Acceptable parking facilities shall be convenient from the street and shall meet one of the following:            1. Covered, lockable enclosures with permanently anchored racks for bicycles;            2. Lockable bicycle rooms with permanently anchored racks; or            3. Lockable, permanently anchored bicycle lockers.  <b>Note:</b> Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.</p>	
5.106.5.2	Designated Parking	<p><b>5.106.5.2 Designated parking for fuel-efficient vehicles.</b> In new projects or additions or alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel efficient, and carpool/van pool vehicles per Table 5.106.5.2.</p> <p><b>5.106.5.2.1 Parking stall marking.</b> Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle:            CLEAN AIR/            VANPOOL/EV  <b>Note:</b> Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.</p>	
5.106.5.3	Electric Vehicle (EV) Charging	<p>[N] New Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE).</p> <p><b>5.106.5.3.1 Single charging space requirements. [N]</b> When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the <i>California Electrical Code</i>. Construction plans and specifications shall include, but are not limited to, the following:            1. The type and location of the EVSE.            2. A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.            3. The raceway shall not be less than trade size 1".            4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed suitable cabinet, box, enclosure or equivalent.            5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE.</p> <p><b>5.106.5.3.2 Multiple charging spaces requirements. [N]</b> When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the <i>California Electrical Code</i>. Construction plans and specifications shall include, but are not limited to, the following:            1. The type and location of the EVSE.            2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent.            3. Plan design shall be based upon 40-ampere minimum branch circuits.</p>	

**NONRESIDENTIAL MANDATORY MEASURES**

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		<p>4. Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated amperage.</p> <p>5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE.</p> <p><b>5.106.5.3.3 EV charging space calculation. [N]</b> Use Table 5.106.5.3.3 to determine if single or multiple charging space requirements apply for the future installation of EVSE.</p>	
		<p><b>5.106.5.3.4 Identification [N].</b> The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."</p> <p><b>5.106.5.3.5 [N]</b> Future charging spaces qualify as designated parking as described in Section 5.106.5.2 <b>Designated parking.</b></p>	
5.106.8	Light Pollution Reduction	<p>New outdoor lighting systems shall be designed and installed to comply with:</p> <ol style="list-style-type: none"> <li>1. The minimum requirements in the <i>California Energy Code</i> for Lighting Zones 1–4 as defined in Chapter 10 of the <i>California Administrative Code</i>; and</li> <li>2. Backlight, Uplight and Glare (BUG) ratings defined in IESNA TM-15-11; and</li> <li>3. Allowable BUG ratings not exceeding those shown in Table 5.106.8, or</li> </ol> <p>Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>1. Luminaires that qualify as exceptions in Section 147 of <i>Calif. Energy Code</i></li> <li>2. Emergency lighting</li> </ol>	
5.106.10	Grading and Paving	<p>Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include those shown in section 5.106.8 Items 1–5.</p> <p><b>Exceptions:</b> Additions and alterations not altering the drainage path.</p>	
<b>ENERGY EFFICIENCY</b>			
5.201.1	Scope	Building meets or exceeds the requirements of the <i>California Building Energy Efficiency Standards</i> .	
<b>WATER EFFICIENCY AND CONSERVATION (Indoor Water Use)</b>			
5.303.1	Meters	<p>Separate meters shall be installed for the uses described in Sections 5.303.1.1 and 5.303.1.2.</p> <p><b>5.303.1.1 New buildings or additions in excess of 50,000 square feet.</b> Separate submeters shall be installed as follows:</p> <ol style="list-style-type: none"> <li>1. For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.</li> <li>2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems:             <ol style="list-style-type: none"> <li>a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s)</li> <li>b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s)</li> <li>c. Steam and hot-water boilers with energy input more than 500,000 Btu/h (147 kW)</li> </ol> </li> </ol> <p><b>5.303.1.2 Excess consumption.</b> A separate submeter or metering device shall be provided for any tenant within a new building or an addition that is projected to consume more than 1,000 gal/day (3800 L/day).</p>	

**NONRESIDENTIAL MANDATORY MEASURES**

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5.303.3	Water Conserving Plumbing Fixtures and Fittings	<p>Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:</p> <table border="1" data-bbox="500 352 1235 659"> <thead> <tr> <th data-bbox="500 352 867 394">Plumbing fixtures &amp; fittings</th> <th data-bbox="872 352 1235 394">Maximum</th> </tr> </thead> <tbody> <tr> <td data-bbox="500 401 867 432">Water closets</td> <td data-bbox="872 401 1235 432">1.28 gallons/flush</td> </tr> <tr> <td data-bbox="500 438 867 470">Showerheads</td> <td data-bbox="872 438 1235 470">2.0 gpm @ 80 psi</td> </tr> <tr> <td data-bbox="500 476 867 508">Kitchen faucets</td> <td data-bbox="872 476 1235 508">1.8 gpm @ 60 psi</td> </tr> <tr> <td data-bbox="500 514 867 546">Nonresidential lavatory faucets</td> <td data-bbox="872 514 1235 546">0.5 gpm @ 60 psi</td> </tr> <tr> <td data-bbox="500 552 867 583">Wash fountains</td> <td data-bbox="872 552 1235 583">1.8 gpm/20" rim space @ 60 psi</td> </tr> <tr> <td data-bbox="500 590 867 621">Metering faucets</td> <td data-bbox="872 590 1235 621">0.20 gallons/cycle</td> </tr> <tr> <td data-bbox="500 627 867 659">Metering faucets for wash fountain</td> <td data-bbox="872 627 1235 659">0.20 gallons/cycle</td> </tr> <tr> <td data-bbox="500 665 867 697">Pre-rinse spray valve (with an integral automatic shut off)</td> <td data-bbox="872 665 1235 697">1.6 gpm @ 60 psi</td> </tr> <tr> <td data-bbox="500 703 867 735">Urinals</td> <td data-bbox="872 703 1235 735">0.5 gallons/flush</td> </tr> </tbody> </table>	Plumbing fixtures & fittings	Maximum	Water closets	1.28 gallons/flush	Showerheads	2.0 gpm @ 80 psi	Kitchen faucets	1.8 gpm @ 60 psi	Nonresidential lavatory faucets	0.5 gpm @ 60 psi	Wash fountains	1.8 gpm/20" rim space @ 60 psi	Metering faucets	0.20 gallons/cycle	Metering faucets for wash fountain	0.20 gallons/cycle	Pre-rinse spray valve (with an integral automatic shut off)	1.6 gpm @ 60 psi	Urinals	0.5 gallons/flush	
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5.303.4	Areas of Additions or Alteration	For those occupancies within the authority of the California Building Standards Commission as specified in Section 103, the provisions of Section 5.303.3 shall apply to new fixtures in additions or areas of alterations to the building.																					
5.303.6	Standards for Plumbing Fixtures and Fittings	Plumbing fixtures and fittings shall be installed in accordance with the <i>California Plumbing Code</i> , and shall meet the applicable standards referenced in Table 1401.1 of the <i>California Plumbing Code</i> and in Chapter 6 of this code.																					
<b>WATER EFFICIENCY AND CONSERVATION (Outdoor Water Use)</b>																							
5.304.1	Water Budget	A water budget shall be developed for landscape irrigation use that installed in conjunction with a new building or an addition or alteration.																					
5.304.2	Outdoor Potable Water Use	For new water service or for addition or alteration requiring upgraded water service for landscaped areas of at least 1,000 square feet but not more than 5,000 square feet, separate submeters or metering devices shall be installed for outdoor potable water use.																					
5.304.3	Irrigation Design	<p>In new nonresidential construction or building addition or alteration with at least 1,000 square feet but not more than 2,500 square feet of cumulative landscaped area (the level at which the MWELO applies), install irrigation controllers and sensors which include the following criteria and meet manufacturer's recommendations.</p> <p><b>5.304.3.1 Irrigation controllers.</b> Automatic irrigation system controllers installed at the time of final inspection shall comply with the following:</p> <ol style="list-style-type: none"> <li>1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.</li> <li>2. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.</li> </ol>																					
<b>MATERIAL CONSERVATION &amp; RESOURCE EFFICIENCY (Weather Resistance and Moisture Management)</b>																							
5.407.1	Weather Protection	Provide a weather-resistant exterior wall and foundation envelope as required by <i>California Building Code</i> , Section 1403.2 and <i>California Energy Code</i> , Section 150, manufacturer's installation instructions or local ordinance, whichever is more stringent.																					
5.407.2	Moisture Control	<p>Employ moisture control measures by the following methods:</p> <p><b>5.407.2.1 Sprinklers.</b> Design and maintain landscape irrigation systems to prevent irrigation spray on structures.</p> <p><b>5.407.2.2 Entries and openings.</b> Design exterior entries and openings to prevent water intrusion into buildings as follows:</p> <p><b>5.407.2.2.1 Exterior door protection.</b> Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:</p> <ol style="list-style-type: none"> <li>1. An installed awning at least 4 feet in depth.</li> <li>2. The door is protected by a roof overhang at least 4 feet in depth.</li> <li>3. The door is recessed at least 4 feet.</li> <li>4. Other methods which provide equivalent protection.</li> </ol> <p><b>5.407.2.2.2 Flashing.</b> Install flashings integrated with a drainage plane.</p>																					

**NONRESIDENTIAL MANDATORY MEASURES**

SECTION	MEASURES	REQUIREMENTS	Measures provided on plan sheet:
<b>MATERIAL CONSERVATION &amp; RESOURCE EFFICIENCY (Construction Waste Reduction, Disposal &amp; Recycling)</b>			
5.408.1	Construction Waste Management	Recycle and/or salvage for reuse a minimum of 50% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.	
5.408.1.1	Construction waste management plan	Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that complies with Items 1 through 4 of this section.	
5.408.1.2	Waste Management Company	Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section. <b>Exceptions to Sections 5.408.1.1 and 5.408.1.2:</b> <ol style="list-style-type: none"> <li>1. Excavated soil and land-clearing debris</li> <li>2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.</li> <li>3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets</li> </ol>	
5.408.1.4	Documentation	Provide documentation of the waste management plan that meets the requirements listed in Sections 5.408.1.1 through 5.408.1.3, and the plan is accessible to the enforcement authority.	
5.408.1.3	Waste Stream Reduction Alternative	The combined weight of new construction disposal that does not exceed 2 lbs/sqft of building area may be deemed to meet the 50% minimum requirement as approved by the enforcing agency.	
5.408.3	Excavated Soil and Land Clearing Debris	100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. <b>Exception:</b> Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.	
<b>MATERIAL CONSERVATION &amp; RESOURCE EFFICIENCY (Building Maintenance and Operation)</b>			
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 nonhazardous materials for recycling.  <b>5.410.1.1 Additions.</b> All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30% or more in floor area, shall provide recycling areas on site. <b>Exception:</b> addition within a tenant space resulting in less than a 30% increase in the tenant space floor area.	
5.410.2	Commissioning	<p><b>[N]</b> New buildings 10,000 square feet and over, building commissioning for all building systems covered by Title 24, Part 6, process systems and renewable energy systems shall be included in the design and construction processes of the building project. Commissioning requirements shall include items listed in Section 5.410.2.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>1. Unconditioned warehouses of any size</li> <li>2. Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses</li> <li>3. Tenant improvements less than 10,000 sqft as described in Section 303.1.1.</li> <li>4. Open parking garages of any size, or open parking garage areas of any size, within a structure.</li> </ol> <p><b>5.410.2.1 Owner's Project Requirements (OPR). [N]</b> Documented before the design phase of the project begins the OPR shall include items listed in Section 5.410.2.1.</p> <p><b>5.410.2.2 Basis of Design (BOD). [N]</b> A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project to cover the systems listed in Section 5.410.2.2.</p> <p><b>5.410.2.3 Commissioning Report. [N]</b> A commissioning plan describing how the project will be commissioned shall include items listed in Section 5.410.2.3.</p> <p><b>5.410.2.4 Functional Performance Testing. [N]</b> Functional performance testing shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the approved plans and specifications.</p>	

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		<p><b>5.410.2.5 Documentation and Training. [N]</b>                      A Systems manual and systems operations training are required.</p> <p><b>5.410.2.5.1 Systems manual. [N]</b>                      The systems manual shall be delivered to the building owner or representative and facilities operator and shall include the items listed in Section 5.410.2.5.1.</p> <p><b>5.410.2.5.2 Systems operations training. [N]</b>                      A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and shall include items listed in Section 5.410.2.5.2.</p>	
		<p><b>5.410.2.6 Commissioning Report. [N]</b>                      A report of commissioning process activities undertaken through the design and construction phases of the building project shall be completed and provided to the owner or representative.</p>	
5.410.4	Testing and Adjusting	<p>Testing and adjusting of systems shall be required for new buildings less than 10,000 square feet or new systems to serve an addition or alteration subject to Section 303.1.</p> <p><b>5.410.4.2 Systems.</b>                      Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include, as applicable to the project, the systems listed in Section 5.410.4.2.</p> <p><b>5.410.4.3 Procedures.</b>                      Perform testing and adjusting procedures in accordance with applicable standards on each system as determined by the enforcing agency.</p> <p><b>5.410.4.3.1 HVAC balancing.</b>                      Before a new space-conditioning system serving a building or space is operated for normal use, balance in accordance with the procedures defined by national standards listed in Section 5.410.4.3.1 or as approved by the enforcing agency.</p> <p><b>5.410.4.4 Reporting.</b>                      After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.</p> <p><b>5.410.4.5 Operation and maintenance manual.</b>                      Provide the building owner with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspection.</p> <p><b>5.410.4.5.1 Inspection and reports.</b>                      Include a copy of all inspection verifications and reports required by the enforcing agency.</p>	
<b>ENVIRONMENTAL QUALITY (Fireplaces)</b>			
5.503.1	General	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 <i>California Energy Code</i> , Title 24, Part 6, Subchapter 7, Section 150.	
5.503.1.1	Woodstoves	Woodstoves and pellet stoves shall comply with U.S. EPA Phase II emission limits where applicable.	
<b>ENVIRONMENTAL QUALITY (Pollutant Control)</b>			
5.504.1.3	Temporary Ventilation	If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992. Replace all filters immediately prior to occupancy, or, if building is occupied during alteration, at the conclusion of construction.	
5.504.3	Covering of Duct Openings and Protection of Mechanical Equipment During Construction	At the time of rough installation and during storage on the construction site and until final startup of the heating, cooling and ventilating 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, water and debris which may enter the system.	
5.504.4	Finish Material Pollutant Control	Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.4.	
5.504.4.1	Adhesives, Sealants and Caulks	<p>Adhesives and sealants used on the project shall meet the requirements of the following standards.</p> <ol style="list-style-type: none"> <li>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.</li> <li>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</li> </ol>	

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		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 <i>California Code of Regulations</i> , Title 17, commencing with Section 94507.	
5.504.4.3	Paints and Coatings	Architectural paints and coatings shall comply with Table 5.504.4.3 unless more stringent local limits apply.  <b>5.504.4.3.1 Aerosol paints and coatings.</b> 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 (CCR, Title 17, Section 94520 et seq.).	
		<b>5.504.4.3.2 Verification.</b> Verification of compliance with this section shall be provided at the request of the enforcing agency.	
5.504.4.4	Carpet Systems	All carpet installed in the building interior shall meet the testing and product requirements of one of the standards listed in Section 5.504.4.4.  <b>5.504.4.4.1 Carpet cushion.</b> All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.  <b>5.504.4.4.2 Carpet adhesive.</b> All carpet adhesive shall meet the requirements of Table 5.504.4.1.	
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 Table 5.504.4.5.  <b>5.504.4.5.3 Documentation.</b> Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following. <ol style="list-style-type: none"> <li>1. Product certifications and specifications</li> <li>2. Chain of custody certifications</li> <li>3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.)</li> <li>4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.</li> <li>5. Other methods acceptable to the enforcing agency.</li> </ol>	
5.504.4.6	Resilient Flooring Systems	For 80% of floor area receiving resilient flooring, install resilient flooring which meets one of the following: <ol style="list-style-type: none"> <li>1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;</li> <li>2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for Testing and Evaluation Chambers, Version 1.1, February 2010;</li> <li>3. Compliant with the California Collaborative for High Performance Schools (CA-CHPS) Criteria Interpretation for EQ 7.0 and 7.1 (formerly Eq 2.2) dated July 2012 and listed in the CHPS High Performance product Database; or</li> <li>4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's &amp; School Program).</li> </ol> <b>5.504.4.6.1 Verification of compliance.</b> Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.	
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 that provides at least a MERV of 8. MERV 8 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual. <b>Exceptions:</b> <ol style="list-style-type: none"> <li>1. An ASHREA 10% to 15% efficiency filter shall be permitted for an HVAC unit meeting the 2013 <i>California Energy Code</i> having 60,000 Btu/h or less capacity per fan coil, if the energy use of the air delivery system is 0.4 W/cfm or less at design air flow.</li> <li>2. Existing mechanical equipment.</li> </ol> <b>5.504.5.3.1 Labeling.</b> Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.	
5.504.7	Environmental Tobacco Smoke (ETS) Control	Prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows where outdoor areas are provided for smoking and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city,	

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<b>ENVIRONMENTAL QUALITY (Indoor Moisture Control)</b>			
5.505.1	Indoor Moisture Control	Buildings shall meet or exceed the provisions of 2013 <i>California Building Code</i> , CCR, Title 24, Part 2, Sections 1203 (Ventilation) and Chapter 14 (Exterior Walls).	
<b>ENVIRONMENTAL QUALITY (Indoor Air Quality)</b>			
5.506.1	Outside Air Delivery	For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 121 of the <i>California Energy Code</i> and Chapter 4 of CCR, Title 8 or the applicable local code, whichever is more stringent.	
5.506.2	Carbon Dioxide (CO <sub>2</sub> ) Monitoring	For buildings or additions equipped with demand control ventilation, CO <sub>2</sub> sensors and ventilation controls shall be specified and installed in accordance with the requirements of the 2013 <i>California Energy Code</i> , Section 121(c)(4).	
<b>ENVIRONMENTAL QUALITY (Environmental Comfort)</b>			
5.507.4	Acoustical Control	Employ building assemblies and components with STC values determined in accordance with ASTM E 90 and ASTM E 413 or OITC determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.	
5.507.4.1	Prescriptive Method	<p>Wall and floor-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:</p> <ol style="list-style-type: none"> <li>1. Within the 65 CNEL noise contour of an airport.</li> <li>2. Within the 65 CNEL or L<sub>dn</sub> noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.</li> </ol> <p><b>5.507.4.1.1 Noise exposure where noise contours are not readily available.</b> Buildings exposed to a noise level of 65 dB L<sub>eq</sub>-1Hr during any hour of operation shall have building, addition, or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).</p>	
5.507.4.2	Performance Method	<p>For buildings located as defined in Sections A5.507.4.1 or A5.507.4.1.1, wall and roof-ceiling assemblies making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (L<sub>eq</sub>-1Hr) of 50 dBA in occupied areas during any hour of operation.</p> <p><b>5.507.4.2.1 Site features.</b> Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.</p> <p><b>5.507.4.2.2 Documentation of compliance.</b> An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.</p> <p><b>5.507.4.3 Interior sound transmission.</b> Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.</p>	
<b>ENVIRONMENTAL QUALITY (Outdoor Air Quality)</b>			
5.508.1	Ozone Depletion and Greenhouse Gas Reductions	<p>Installations of HVAC, refrigeration, and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.</p> <p><b>5.508.1.1 Chlorofluorocarbons (CFCs).</b> Install HVAC, refrigeration &amp; fire suppression equipment that do not contain CFCs.</p> <p><b>5.508.1.2 Halons.</b> Install HVAC, refrigeration &amp; fire suppression equipment that do not contain Halons.</p>	
5.508.2	Supermarket Refrigerant Leak Reduction	<p>New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 sqft or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facility and the replacement of existing refrigeration systems in existing facilities.</p> <p><b>Exception:</b> refrigeration systems containing low-global-warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP</p>	

**NONRESIDENTIAL MANDATORY MEASURES,**

SECTION	MEASURES	REQUIREMENTS	Measures provided on plan sheet:
		refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO <sub>2</sub> ), and potentially other refrigerants.	
		Piping compliant with the <i>California Mechanical code</i> shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4", flared tubing connection and short radius elbows shall not be used in refrigerant systems except as noted below.  <b>5.508.2.1.1 Treaded pipe.</b> Threaded connections are permitted at the compressor rack.	
5.508.2.1	Refrigerant Piping	<b>5.508.2.1.2 Copper pipe.</b> Copper tubing with an OD less than 1/4" may be used in systems with a refrigerant charge of 5 pounds or less. <b>5.508.2.1.2.1 Anchorage.</b> 1/4" OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.  <b>5.508.2.1.3 Flared tubing connections.</b> Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil. <b>Exception:</b> Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.  <b>5.508.2.1.4 Elbows.</b> Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.	
5.508.2.2	Valves	Valves and fittings shall comply with the <i>California Mechanical Code</i> and as follows:  <b>5.508.2.2.1 Pressure relief valves.</b> For vessel containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet the pressure relief valve. <b>5.508.2.2.1.1 Pressure detection.</b> A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.  <b>5.508.2.2.2 Access valves.</b> Only Schrader access valves with a brass or steel body are permitted for use. <b>5.508.2.2.2.1 Valves caps.</b> For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic. <b>5.508.2.2.2.2 Seal caps.</b> If designed for it, the cap shall have a neoprene O-ring in place. <b>5.508.2.2.2.2.1 Chain tethers.</b> Chain tethers to fit over the stem are required for valves designed to have seal caps. <b>Exceptions:</b> Valves with seal caps that are not removed from the valve during stem operation.	
5.508.2.3	Refrigerated Service Cases	Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.  <b>5.508.2.3.1 Coil coating.</b> Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.	
5.508.2.4	Refrigerant Receivers	Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.	
5.508.2.5	Pressure Testing	The systems shall be pressure tested during installation prior to evacuation & charging.  <b>5.508.2.5.1 Minimum pressure.</b> The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.  <b>5.508.2.5.2 Leaks.</b> Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.  <b>5.508.2.5.3 Allowable pressure change.</b> The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.	

**NONRESIDENTIAL MANDATORY MEASURES.**

SECTION	MEASURES	REQUIREMENTS	Measures provided on plan sheet:
5.508.2.6	Evacuation	<p>The system shall be evacuated after pressure testing prior to charging.</p> <p><b>5.508.2.6.1 First vacuum.</b> Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold down for 30 minutes.</p> <p><b>5.508.2.6.2 Second vacuum.</b> Pull a system vacuum to a minimum of 500 microns and hold for 30 minutes.</p> <p><b>5.508.2.6.3 Third vacuum.</b> Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.</p>	

**Note:**  
This check list is intended only as an aid to the user and may not contain complete code language. Refer to 2013 CALGreen Chapter 5 for complete code language.