



Community Development Department – Building Division
2022 CALGREEN MANDATORY MEASURES
CHECKLIST
(NON-RESIDENTIAL)

This checklist applies to newly constructed buildings, building additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of \$200,000 or above. Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work. (sec. 301.3)

Parenthetical references are to the noted section of the *2022 California Green Building Code*, unless stated otherwise.

Measures in this checklist apply to both newly constructed buildings and additions and alterations unless noted with the following banner (sec. 301.1):

[N] = Measures applicable to newly constructed buildings only

[A] = Measures applicable to additions and alterations only

Mandatory Feature or Measure	Required
PLANNING AND DESIGN	
Site Development (5.106)	
Projects shall comply with Benicia Municipal Code Chapter 15.73 for erosion and sediment controls.	
<p>Short-term bicycle parking. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.</p> <p>Exception: Additions or alterations which add nine or less visitor vehicular parking spaces.</p>	
<p>Long-term bicycle parking. For new buildings with over 10 tenant-occupants or for additions or alterations that add 10 or more tenant vehicular parking spaces, provide secure bicycle parking for 5% of the tenant vehicular parking spaces being added, with a minimum of one bicycle parking facility.</p> <p>Shell Buildings. For phased projects, provide secure bicycle parking for 5% of the anticipated tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.</p> <p>Acceptable bicycle parking. Must be convenient from the street and meet one of the following: Covered, lockable enclosures with permanently anchored racks for bicycles OR Lockable bicycle rooms with permanently anchored racks OR Lockable, permanently anchored bicycle lockers.</p>	
<p>Electric vehicle (EV) charging. [N] Construction to provide electric vehicle infrastructure and facilitate electric vehicle charging shall comply with sec. 5.106.5.3.1 and shall be provided in accordance with the California Building Code (CBC) and California Electrical Code (CEC).</p>	
<p>EV capable spaces. [N] EV capable spaces shall be provided in accordance with Table 5.106.5.3.1 and the requirements of section 5.106.5.3.1.</p> <ul style="list-style-type: none"> • Mark reserved overcurrent protective devices and raceway terminations as “EV CAPABLE”. 	

<p>Electric vehicle charging stations (EVCS). EV capable spaces shall be provided with EVSE to create EVCS in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 may be provided with EVSE in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided.</p> <ul style="list-style-type: none"> • One EV charger with multiple connectors capable of charging multiple EVs simultaneously may be permitted, subject to the capacity requirements of section 5.106.5.3.2. • Each installed DCFC EVSE shall be permitted to reduce the number of required EV capable spaces without EVSE by five. 	
<p>Use of automatic load management systems (ALMS). ALMS shall be permitted for EVCS, which may reduce the required electrical load capacity as per sec. 5.106.5.3.3.</p>	
<p>Accessible EVCS. When EVSE is installed, accessible EVCS shall be provided in accordance with the <i>California Building Code</i>, Chapter 11B, Section 11B-228.3.</p>	
<p>Electric vehicle (EV) charging: medium-duty and heavy-duty. [N] Construction shall comply with Section 5.106.5.4.1 to facilitate future installation of electric vehicle supply equipment (EVSE). Construction for warehouses, grocery stores and retail stores with planned off-street loading spaces shall also comply with Section 5.106.5.4.1 for future installation of medium- and heavy-duty EVSE.</p> <ul style="list-style-type: none"> • Where EVSE(s) is/are installed, it shall be in accordance with the <i>California Building Code</i>, the <i>California Electrical Code</i>, and the additional requirements of sec. 5.106.5.4.1. 	
<p>Electric vehicle charging readiness requirements for warehouses, grocery stores and retail stores with planned off-street loading spaces. In order to avoid future demolition when adding EV supply and distribution equipment, spare raceway(s) or busway(s) and adequate capacity for transformer(s), service panel(s) shall be installed in accordance with the <i>California Electrical Code</i>.</p> <ul style="list-style-type: none"> • Construction plans and specifications shall include at least the elements described in sec. 5.106.5.4.1 and Table 5.106.5.4.1. 	
<p>Light pollution reduction. [N] Outdoor lighting systems shall be designed and installed to comply with the requirements of 5.106.8.</p>	
<p>Grading and paving. Construction plans shall indicate how site grading, or a drainage system will manage all surface water flows to keep water from entering buildings.</p> <p>Exception: Additions and alterations not altering the drainage path.</p>	
<p>ENERGY EFFICIENCY (5.201)</p>	
<p>For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.</p>	
<p>WATER EFFICIENCY AND CONSERVATION</p>	
<p>Indoor Water Use (5.303)</p>	
<p>All noncompliant plumbing fixtures in any commercial real property shall be replaced with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to final inspection. (California Civil Code sec. 1101.5)</p>	
<p>Meters. Separate sub-meters or metering devices shall be installed for the uses described below:</p>	
<p>New buildings or additions in excess of 50,000 square feet.</p> <ol style="list-style-type: none"> 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. 	
<ol style="list-style-type: none"> 2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems: <ol style="list-style-type: none"> a) Makeup water for cooling towers where flow through is greater than 500 gpm. b) Makeup water for evaporative coolers greater than 6gpm. c) Steam and hot-water boilers with energy input more than 500,000 Btu/h. 	
<p>Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.</p>	

Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:	
Water closets. The effective flush volume of all water closets shall not exceed 1.28 gpf. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets.	
Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gpf. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5gpf.	
Single showerheads. Showerheads shall have a max. flow rate of not more than 1.8 gpm at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.	
Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time. Note: A hand-held shower shall be considered a showerhead. .	
Non-residential lavatory faucets. Lavatory faucets shall have a maximum flow rate of not more than 0.5 gpm at 60 psi.	
Kitchen faucets. Kitchen faucets shall have a maximum flow rate of not more than 1.8 gpm at 60psi.	
Wash fountains. Wash fountains shall have a maximum flow rate of not more than 1.8 gpm/20 [rim space (inches) at 60 psi].	
Metering faucets. Metering faucets shall not deliver more than 0.20 gallons per cycle.	
Metering faucets for wash fountains. Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per cycle/20 [rim space (inches) at 60psi].	
Pre-rinse spray valve. When installed, shall be equipped with an integral shutoff and comply with the California Code of Regulations as specified in sec. 5.303.3.4.6.	
Commercial kitchen equipment. Disposers shall either modulate the use of water to no more than 1gpm when the disposer is not in use or shall automatically shut off after no more than 10 min. of inactivity. Disposers shall use no more than 8 gpm of water.	
Outdoor Water Use (5.304)	
Outdoor potable water use in landscape areas. Non-residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.	
Water Reuse Systems (5.305)	
(Reserved)	
MATERIAL CONSERVATION AND RESOURCE EFFICIENCY	
Water Resistance and Moisture Management (5.407)	
Weather Protection. Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1402.2 (Weather Protection), manufacturer's installation instructions or local ordinance, whichever is more stringent.	
Moisture Control. Employ moisture control measures by the following methods.	
Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.	
Entries and Openings. Design exterior entries and openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows: Exterior Door Protection. Primary exterior entries shall be covered to prevent water intrusion by using non-absorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the methods in sec. 5.407.2.2.1. Flashing. Install flashings integrated with a drainage plane.	

Construction Waste Reduction, Disposal and Recycling (5.408)	
Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the non-hazardous construction and demolition waste in accordance with sec. 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.	
Documentation. Documentation shall be provided through Green Halo (https://benicia.wastetracking.com/) which demonstrates compliance prior to final inspection.	
Universal Waste [A]. Additions and alterations to a building or tenant space that meet the scoping provisions in sec. 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.	
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.	
Building Maintenance and Operation (5.410)	
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.	
Additions [A]. 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. Exceptions. Additions within a tenant space resulting in less than a 30% increase in the tenant space floor area.	
Commissioning [N]. For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction process 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 sec. 5.410.2 by trained personnel with experience on projects of comparable size and complexity. Commissioning Requirements shall include those items listed in sec. 5.410.2.	
Owner's Project Requirements (OPR) [N]. The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. The documentation shall include those items listed in sec. 5.410.2.1.	
Basis of Design (BOD) [N]. 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. The Basis of Design documentation shall include those items listed in sec. 5.410.2.2.	
Commissioning plan [N]. Prior to permit issuance a commissioning plan shall be completed to document how the project will be commissioned. The commissioning plan shall include those items listed in sec. 5.410.2.3.	
Functional performance testing [N]. Functional performance tests shall demonstrate the correct installation and operation of each component, system, and system-to-system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.	
Documentation and Training [N]. A systems manual and systems operations training are required, including Occupational Safety and Health Act (OSHA) requirements in the California Code of Regulations (CCR), Title 8, Section 5142, and other related regulations.	
Systems manual [N]. The Systems Manual, which includes documentation of the operational aspects of the building, shall be delivered to the building owner or representative and the facilities operator. The systems manual shall include those items listed in sec. 5.410.2.5.1.	
Systems operations training [N]. A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report. The training program shall include those items listed in sec. 5.410.2.5.2.	

Commissioning report [N]. 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.	
Testing and adjusting. 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 sec. 303.1.	
Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall be those listed in sec. 5.410.4.2.	
Procedures. Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system.	
HVAC balancing. Before a new space-conditioning system serving a building or space is operated for normal use, balance the system should in accordance with the procedures defined in sec. 5.410.4.3.1.	
Reporting. After completion of testing, adjusting, and balancing, provide a final report of testing signed by the individual responsible for performing these services.	
Operation and maintenance (O&M) manual. Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system prior to final inspections.	
Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.	
ENVIRONMENTAL QUALITY	
Fireplaces (5.503)	
Fireplaces. Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed wood-stove or pellet stove, and refer to residential requirements in <i>California Energy Code</i> , Title 24, Part 6, Subchapter 7, Section 150. Woodstoves, pellet stoves, and fireplaces shall comply with applicable local ordinances.	
Woodstoves. Woodstove and pellet stoves shall comply with US EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits.	
Bay Area Air Quality Management District. Only gas fireplaces, pellet-fueled devices, or E.P.A. certified wood-burning devices may be installed in new buildings, added to or replace wood-burning devices in existing buildings, or be used when reconstructing or repairing a wood-burning device	
Pollutant Control (5.504)	
Temporary ventilation. The permanent HVAC system shall only be used during construction if necessary to condition the building or areas of addition or alteration within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a MERV of 8 or average efficiency of 30%. Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction.	
Covering of duct openings and protection of mechanical equipment during construction. Openings in ducts and other related air distribution components and equipment shall be covered by an acceptable method to reduce the amount of dust, water, and debris which may enter the system from the time these items are stored on the construction site and/or their rough installation until final startup of the system.	
Finish material pollutant control. Adhesives, sealants, and caulks. Shall comply with VOC limits and prohibitions on use of certain toxic compounds as described in sec. 5.504.4.1.	
Paints and coatings. Shall comply with VOC limits as described in sec. 5.504.4.3.	
Aerosol paints and coatings. Shall comply with Product-Weighted MIR limits for ROC, VOC, and certain other toxic compounds as described in sec. 5.504.4.3.1.	
Carpet systems. Shall meet the requirements of the CDPH "Standard Method for the Testing of Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers". Adhesives shall meet the requirements of Table 5.504.4.1.	

<p>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 formaldehyde limits described in sec. 5.504.4.5.</p>	
<p>Resilient flooring systems. At least 80% of the floor area shall meet the requirements of the CDPH “Standard Method for the Testing of Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers”.</p>	
<p>Thermal insulation. Comply with the requirements of the CDPH “Standard Method for the Testing of Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers”.</p>	
<p>Acoustical ceilings and wall panels. Comply with the requirements of the CDPH “Standard Method for the Testing of Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers”.</p>	
<p>Verification. Maintain documentation suitable to verify compliance with sec. 5.504.4, which shall be provided to the enforcing agency upon request.</p>	
<p>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 MERV of 13. These must be installed prior to occupancy and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.</p> <p>Exceptions: Existing mechanical equipment.</p>	
<p>Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.</p>	
<p>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 within buildings.</p>	
<p>Indoor Moisture Control (5.505)</p>	
<p>Indoor moisture control. Buildings shall meet or exceed the provisions of <i>California Building Code</i>, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see sec. 5.407.2.</p>	
<p>Indoor Air Quality (5.506)</p>	
<p>Outside Air Delivery. For Mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.</p>	
<p>Carbon dioxide (CO₂) monitoring. For buildings or additions equipped with demand control ventilation, CO₂ sensors and ventilation controls shall be specified and installed in accordance with the California Energy Code sec. 120.1(c)4.</p>	
<p>Environmental Comfort (5.507)</p>	
<p>Acoustical Control. Employ building assemblies and components with Sound Transmission Class (STC) values either the prescriptive or performance methods below.</p> <p>Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking garage structures, and utility buildings.</p>	
<p>Prescriptive method - Exterior noise transmission. Wall and roof ceiling assemblies 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, or OITC of 30 in the following locations:</p> <ol style="list-style-type: none"> 1. Within the 65 CNEL noise contour of an airport. 2. Within the 65 CNEL or L_{dn} noise contour of a freeway, railroad, industrial source or fixed-guideway source. <p>Noise Exposure Where Noise Contours Are Not Readily Available. Buildings exposed to a noise level of 65 dB L_{eq}-1-hr 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>	

<p>Performance method. For buildings located as defined in sec. 5.507.4.1 (Prescriptive) or 5.507.4.1.1 (Noise Contour Not Available), wall and roof-ceiling assemblies exposed to the noise source 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_{eq-1Hr}) of 50 dBA in occupied areas during any hour of operation.</p>	
<p>Documentation of Compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.</p>	
<p>Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have a STC of at least 40.</p>	
<p>Outdoor Air Quality (5.508)</p>	
<p>Ozone depletion and greenhouse gas reductions. Install HVAC, refrigeration and fire suppression equipment that do not contain Chlorofluorocarbons (CFCs) and Halons.</p>	
<p>Supermarket refrigerant leak reduction. New commercial refrigeration systems (including both new facilities and the replacement of existing refrigeration systems in existing facilities) installed in retail food stores 8,000 square feet 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 and contain high-global-warming potential (High-GWP) refrigerants with a GWP of 150 or greater, shall comply with the following:</p>	
<p>Refrigerant piping. Piping 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 connections and short radius elbows shall not be used in refrigerant systems except as noted in sec. 5.508.2.1.1, 5.508.2.1.2, 5.508.2.1.3, and 5.508.2.1.4.</p>	
<p>Valves. Valves and fittings shall comply with the requirements in sec. 5.508.2.2 and the <i>California Mechanical Code</i>.</p>	
<p>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. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.</p>	
<p>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.</p>	
<p>Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging and shall comply with all requirements per sec. 5.508.2.5.</p>	
<p>Evacuation. The system shall be evacuated after pressure testing and prior to charging and shall comply with all requirements per sec. 5.508.2.6.</p>	
<p>INSTALLER AND SPECIAL INSPECTOR QUALIFICATIONS</p>	
<p>Qualifications (702)</p>	
<p>Installer training. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. For examples, see sec. 702.1.</p>	
<p>Special inspection. Special inspectors employed by the owner or owner's agent shall demonstrate competence for the particular type of inspection to be performed and shall have a certification or qualifications acceptable to the enforcing agency.</p> <p>Note: Special Inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with CalGreen.</p>	
<p>Verifications (703)</p>	
<p>Documentation. Documentation used to show compliance with CalGreen shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency, which demonstrate substantial conformance.</p>	