



**Building and Safety
Permit Service Center**

Projects for new buildings, additions of 1,000 square feet or greater and/or building alterations with a permit valuation of \$200,000 or above are subject to the provisions of the California Green Building Standards Code. This checklist is provided by the City of Berkeley in order to demonstrate compliance with the code and facilitate permit approval.

Instructions:

1. Read and understand the requirements of all mandatory measures listed in this checklist.
2. Mark all mandatory measures that are applicable to the proposed project.
3. Coordinate the construction drawings with the mandatory measures.
4. Incorporate this checklist into the submitted set of construction drawings on full sized sheets.

Building and Safety
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Code Compliance Checklist

CALGREEN NON-RESIDENTIAL

Project Information

Permit Number:

Project Address:

Select One: New Building [N] Addition [A] Alteration

Planning and Design

Storm water pollution prevention. Projects which disturb less than one acre of land shall prevent the pollution of stormwater runoff from the construction activities through one or more of the following measures: [CGBSC 5.106.1]

- **Stormwater management.** Comply with the Stormwater management and erosion control requirements per Title 17 of the City of Berkeley Municipal Code. [CGBSC 5.106.1.1]
- **Best management practices (BMP).** Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMP. [CGBSC 5.106.1.2]
- **Grading and paving.** Indicate how site grading or drainage system will manage all surface water flows to keep water from entering buildings. [CGBSC 5.106.1.10]

Bicycle Parking. Projects adding 10 or more vehicular parking spaces shall comply with the the following or meet the applicable City of Berkeley ordinance, whichever is stricter. [CGBSC 5.106.4.1]

- **Short-term bicycle parking.** Provide permanently anchored bicycle racks within 200 feet 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. [CGBSC 5.106.4.1.1]
- **Long-term bicycle parking.** Provide secure bicycle parking for 5-percent of the tenant vehicular parking spaces being added, with a minimum of one space. [CGBSC 5.106.4.1.2]

Electric Vehicle Charging

Definitions

ELECTRIC VEHICLE (EV) CAPABLE SPACE. A vehicle space with electrical panel space and load capacity to support a branch circuit and necessary raceways, both underground and/or surface mounted, to support EV charging.

ELECTRIC VEHICLE (EV) CHARGER. Off-board charging equipment used to charge an electric vehicle.

ELECTRIC VEHICLE CHARGING SPACE (EV SPACE). A space intended for future installation of EV charging equipment and charging of electric vehicles.

ELECTRIC VEHICLE (EV) READY SPACE. [HCD] A vehicle space which is provided with a branch circuit; any necessary raceways, both underground and/or surface mounted; to accommodate EV charging, terminating in a receptacle or a charger.

ELECTRIC VEHICLE CHARGING STATION (EVCS). One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger. The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device for future EV charging as "EV CAPABLE" and identify the overcurrent protective devices serving EVCS as "EV CHARGER". Raceway termination locations shall be permanently and visibly marked as "EV CAPABLE". [CGBSC 5.106.5.3.1.4]

Raceways. Listed raceways and associated conductors shall be sized to accommodate a dedicated 208/240-volt branch circuit for a future EV charger. The raceway shall not be less than nominal 1-inch inside diameter. Raceways shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Construction documents shall identify the raceway termination point. [CGBSC 5.106.5.3.1 and 5.106.5.3.2]

Electric Vehicle Charging Stations (EVCS). One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger. The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel. [CGBSC 5.106.5.3.2]

EVCS Accessibility / Location. When EVSE is installed, accessible EVCS shall be provided in accordance with the California Building Code, Chapter 11B, Section 11B-228.3. Note: For EVCS signs, refer to Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s). [CGBSC 5.106.5.3.4]

EV Spaces

New Nonresidential Occupancies. When residential parking is provided: [CGBSC 5.106.5.3 and BMC 19.37.040]

- 20% of spaces shall be EV CAPABLE with RACEWAY, panel service capacity and electrical system sufficient to charge all required spaces at a minimum of 40 amperes.
- 10% of spaces shall be an ELECTRIC VEHICLE CHARGING STATION (EVCS)

Note: Calculation for EV CAPABLE spaces and EVCS shall for CGBSC 5.106.5.3 shall be rounded up to the nearest whole number.

Light pollution reduction. [N] Outdoor lighting systems shall be designed and installed to comply with Backlight, Uplight and Glare rating requirements in CALGreen Table 5.106.8 or comply with the City of Berkeley's ordinances, whichever is more stringent. [CGBSC 5.106.8]

Water Efficiency and Conservation

Indoor Water Use: Metering Devices

New buildings or additions in excess of 50,000 square feet. Separate sub-meters shall be installed as follows:

- 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.
- Where separate sub-meters for individual building tenants are unfeasible, for water supplied to the following subsystems:
 - a. Makeup water for cooling towers where flow through is greater than 500 gpm.
 - b. Makeup water for evaporative coolers greater than 6 gpm.
 - c. Steam and hot-water boilers with energy input more than 500,000 Btu/h.

Excess consumption. [N] A separate sub-meter 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. [CGBSC 5.303.1.2]

Indoor Water Use: Water Conservation

Water closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the US EPA WaterSense Specification for Tank-type Toilets. [CGBSC 5.303.3.1]

Urinals

Wall-mounted urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush. [CGBSC 5.303.3.2.1]

Floor-mounted urinals. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush. [CGBSC 5.303.3.2.2]

Showerheads

Single showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the US EPA WaterSense Specification for Showerheads. [CGBSC 5.303.3.3.1]

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. [CGBSC 5.303.3.3.2]

Faucets and Fountains

Nonresidential lavatory faucets. Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi. [CGBSC 5.303.3.4.1]

Kitchen faucets. Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi. [CGBSC 5.303.3.4.2]

Wash fountains. Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute/20 [rim space (inches) at 60 psi]. [CGBSC 5.303.3.4.3]

Metering faucets. Metering faucets shall not deliver more than 0.20 gallons per cycle. [CGBSC 5.303.3.4.4]

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 60 psi]. [CGBSC 5.303.3.4.5]

Pre-Rinse Spray Valves

Pre-rinse spray valves. When installed shall not exceed the maximum flow rate of CGBSC Table H-2 as a function of product class 1, 2, or 3. [CGBSC 5.303.3.4.6]

Commercial Kitchen Equipment

Food waste disposers. Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste/noload) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water. [CGBSC 5.303.4.1]

Outdoor Water Use

Outdoor potable water use in landscape areas. Nonresidential 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. [CGBSC 5.304.1]

Note: The Model Water Efficient Landscape Ordinance (MWELo) is located in the California Code of Regulations, Title 23, Chapter 2.7, Division 2.

Material Conservation and Resource Efficiency**Low-carbon Concrete**

Reduction in cement use. As allowed by the enforcing agency, cement used in concrete mix design shall be reduced not less than 25 percent. Products commonly used to replace cement in concrete mix designs include, but are not limited to fly ash, slag, silica fume, and rice hull ash. [CGBSC 5.405.1 and BMC 19.37.040]

Exception: Minimum cement reductions in concrete mix designs approved by the Engineer of Record may be lower where high early strength is needed for concrete products or to meet an accelerated project schedule.

Water Resistance and Moisture Management

Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures. [CGBSC 5.407.2.1]

Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows: [CGBSC 5.407.2.2]

- **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 following: [CGBSC 5.407.2.2.1]
 - a. An installed awning at least 4 feet in depth.
 - b. The door is protected by a roof overhang at least 4 feet in depth.
 - c. The door is recessed at least 4 feet.
 - d. Other methods which provide equivalent protection.
- **Flashing.** Install flashings integrated with a drainage plane. [CGBSC 5.4.07-2.2.2]

Construction Waste Reduction, Disposal and Recycling

Construction waste management plan & excavated soil and land clearing debris. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste and a minimum of 100 percent of excavated soil, land-clearing debris, concrete and asphalt. Provide a completed City of Berkeley [Construction Waste Management Plan](#). [CGBSC 5.408.1 and CGBSC 5.408.3 and BMC 19.37.040]

Universal waste. [A] Additions and alterations to a building or tenant space 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. [CGBSC 5.408.2]

Building Maintenance and Operation

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, organic waste, and metals. [CGBSC 5.410.1]

Additions. [A] All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30 percent or more in floor area, shall provide recycling areas on site. [CGBSC 5.410.1.1]

Commissioning. [N] For newly constructed 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 by trained personnel with experience on projects of comparable size and complexity. All building operating systems covered by Title 24, Part 6, California Energy Code as well as process equipment and controls, and renewable energy systems shall be included in the scope of the commissioning requirements. [CGBSC 5.410.2]

Owner's or Owner representative'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. This documentation shall include the following: [CGBSC 5.410.2.1]

(Environmental and sustainability goals, Energy efficiency goals, Indoor environmental quality requirements, Project program, including facility functions and hours of operation, and need for after hours operation, Equipment and systems expectations, Building occupant and operation and maintenance (O&M) personnel expectations)

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 document shall cover: [CGBSC 5.410.2.2]

- Heating, ventilation, air conditioning systems and controls
- Indoor lighting system and controls
- Water heating system
- Renewable energy systems
- Landscape irrigation systems
- Water reuse systems

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 the following: [CGBSC 5.410.2.3]

- General project information
- Commissioning process activities, schedules and responsibilities. Plans for the completion of commissioning shall be included.
- Systems to be commissioned.
- Commissioning team information.
- Commissioning goals.

Plans to test systems and components shall include:

(An explanation of the original design intent, Equipment and systems to be tested, including the extent of tests, Functions to be tested, Conditions under which the test shall be performed, Measurable criteria for acceptable performance.)

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, testing methods utilized, and any readings and adjustments made. [CGBSC 5.410.2.4]

Documentation and training. [N] A systems manual and systems operations training are required, including Occupational Safety and Health Act (OSHA) requirements in California Code of Regulations (CCR), Title 8, Section 5142, and other related regulations. [CGBSC 5.410.2.5]

Commissioning report. [N] A report of commissioning process activities undertaken through design and construction phases of the building project shall be completed and provided to the owner or representative. [CGBSC 5.410.2.6]

Testing and adjusting. Testing and adjusting of systems shall be required for newly constructed buildings less than 10,000 square feet, or new systems to serve an addition or alteration, as applicable. [CGBSC 5.410.4]

- HVAC systems and controls
- Indoor and outdoor lighting and controls
- Water heating systems
- Renewable energy systems
- Landscape irrigation systems
- Water reuse systems

Procedures. Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system. [CGBSC 5.410.4.3]

HVAC balancing. In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, balance the system in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural

Standards; Associated Air Balance Council National Standards or as approved by the City of Berkeley. [CGBSC 5.410.3.1]

Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services. [CGBSC 5.410.4.4]

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. O&M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142, and other related regulations. [CGBSC 5.410.4.5]

Environmental Quality

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 Section 150. [CGBSC 5.503.1]

Woodstoves. Woodstove and pellet stoves shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. [CGBSC 5.503.1.1]

Pollutant Control: Mechanical Systems

Temporary ventilation. The permanent HVAC system shall only be used during construction if necessary to condition the building within the required temperature range for material and equipment installation. 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-percent based on ASHRAE 52.1-1992. Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction. [CGBSC 5.504.1]

Covering of duct openings & protection of mechanical equipment during construction. At the time of rough installation and during storage on the construction site 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, sheetmetal or other methods acceptable to the City of Berkeley to reduce the amount of dust, water and debris which may enter the system. [CGBSC 5.504.3]

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 Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 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. Existing mechanical equipment excepted. [CGBSC 5.504.5.3]

- **Labeling.** Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. [CGBSC 5.504.5.3.1]

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 the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of the City of Berkeley, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. [CGBSC 5.504.7]

Pollutant Control: Finish Material

Adhesives, sealants and caulks. Adhesives, sealants and caulks used on the project shall comply with CALGreen Table 5.504.4.1 and 5.504.4.2 for VOC limits. Product units which do not weigh more than 1 pound and do not consist of more than 16 fluid ounces shall comply with statewide VOC standards and California Code of Regulations, Title 17. [CGBSC 5.504.4.1]

Paints and Coatings. Architectural paints and coatings shall comply with VOC limits in CALGreen Table 5.504.4.3. 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 CALGreen Table 5.504.4.3 shall apply. [CGBSC 5.504.4.3]

Aerosol paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in California Code of Regulations, Title 17 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 49. [CGBSC 5.504.4.3.1]

Carpet systems. All carpet and carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350). See California Department of Public Health's website for certification programs and testing labs. <https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx> All carpet adhesive shall meet the requirements of Table 5.504.4.1. [CGBSC 5.504.4.4]

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 shown in

CALGreen Table 5.504.4.5. [CGBSC 5.504.4.5]

Resilient Flooring Systems. Where resilient flooring is installed, at least 80 percent of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350). See California Department of Public Health's website for certification programs and testing labs. <https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx> [CGBSC 5.504.4.4]

Carbon Dioxide Monitoring with Demand Control Ventilation. For buildings or additions equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code 120.1(c)(4). [CGBSC 5.506.2]

Environmental Comfort

Acoustical Control. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method. [CGBSC 5.507.4]

Exterior Noise Transmission, Prescriptive Method. Wall and roof-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 [CGBSC 5.507.4.1]:

1. Within the 65 CNEL noise contour of an airport.
2. Within the 65 CNEL or L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

Exterior Noise Transmission, Performance Method. For buildings located as defined in CGBSC 5.507.4.1 or 5.507.4.1.1, 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. [CGBSC 5.507.4.2]

Interior Sound Transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40. [CGBSC 5.507.4.3]

Outdoor Air Quality

Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with the following: [CGBSC 5.508.1]

- **Chlorofluorocarbons (CFCs).** Install HVAC, re-refrigeration & fire suppression equipment that do not contain CFCs.
- **Halons.** Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.
- **Supermarket refrigerant leak reduction.** New commercial refrigeration systems containing high-global-warming potential refrigerants (GWP of 150 or greater) installed in retail food stores with 8,000 square feet or more of conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units shall comply with refrigerant leak reduction measures. [CGBSC 5.508.2]

Additional:

I certify that I have read and acknowledged all of the Code Requirements noted above. I accept full responsibility for complying with all of the above requirements, as applicable to my project. I further agree that if I fail to comply with the code requirements, due to error or omission, I will correct all deficiencies prior to final inspection.

Name	Signature	Date
Check One:	Contractor	Owner
		Owner's Agent