

ELECTRICAL (2019 CEC)

Never install electrical panels in closets or bathrooms. Maintain a clearance of 36" inches in front of panels, 30" wide or width of equipment and 6'-6" high for headroom (CEC 110.26).

Provide a minimum of one 20A receptacle to be used as a laundry receptacle (CEC 210.11 (C) (2)). Provide a minimum of one 20A circuit for bathroom receptacle outlets (CEC 210.11 (C)).

Kitchens, dining rooms, pantries, breakfast nooks, and similar areas must have a minimum of two 20A circuits. Kitchen, pantry, breakfast nooks, dining rooms, **work surfaces**, and similar areas counter outlets must be installed in every counter space 12" inches or wider, not greater than 4' o.c., within 24" inches of the end of any counter space and not higher than 20" above counter (CEC 210.52 (C)). Island counter spaces shall have at least 1 receptacle outlet unless a range top or sink is installed than 2 receptacles may be required. 1 receptacle is required for peninsular counter spaces. Receptacles shall be located behind kitchen sinks if the counter area depth behind the sink is more than 12" for straight counters and 18" for corner installations. (CEC Figure 210.52(C)(1))

Provide at least 1 outlet in basements, garages, laundry rooms, decks, balconies, porches and within 3' of the outside of each bathroom basin. (CEC 210.52 (D), (F) & (G)) At least one receptacle shall be installed for each vehicle space.

At least one wall switched lighting outlet or fixture shall be installed in every habitable room, bathroom, hallways, stairways, attached garages and detached garages with electrical power, equipment spaces (attics, basements, etc). (CEC 210.70).

Stairways with 6 or more risers shall have wall switch at each floor level at the stair landings. (CEC 210.70(A)(2))

Receptacles shall not be installed within or directly over a bathtub or shower stall. (CEC 406.9(C)) Light pendants, ceiling fans, lighting tracks, etc shall not be located within 3ft horizontally and 8ft vertically above a shower and/or bathtub threshold. (CEC 410.10(D))

All dwellings must have one exterior outlet at the front and the back of the dwelling (CEC 210.52(E)).

GFCI outlets are required for all kitchen receptacles that are designed to serve countertop surfaces, bathrooms, in under-floor spaces or below grade level, in exterior outlets, laundry areas, within 6' of utility/wet bar sinks, **dishwashers** and in all garage outlets including outlets dedicated to a single device or garage door opener (CEC 210.8 (A)).

All 15/20 ampere receptacles installed per CEC 210.52 shall be listed **tamper-resistant** receptacles. (406.12)

Automatic garage door openers shall have battery backup (406.2.1)

Receptacles shall be installed at 12' o.c. maximum in walls starting at 6' maximum from the wall end. Walls longer than two feet shall have a receptacle. Hallway walls longer than 10 ft shall have a receptacle in hallways. (CEC 210.52(A))

Bond all metal gas and water pipes and exposed structural steel to ground. All ground clamps shall be accessible and of an approved type (CEC 250.104).

Furnaces installed in attics and crawl spaces shall have an access platform (catwalk in attics), light switch and receptacle in the space. Provide a service receptacle for the furnace.

Carbon-monoxide alarms shall be installed in dwelling units with fuel-burning appliances or with attached garages (R315):

- Outside of each separate sleeping area in the immediate vicinity of bedrooms
- On every level of a dwelling unit including basements
- Alterations, repairs, or additions exceeding 1,000 dollars (May be battery operated)

Smoke alarms shall be installed (R314):

- In each room used for sleeping purposes.
- Outside of each separate sleeping area in the immediate vicinity of bedrooms.
- In each story, including basements.
- Shall not be installed within 20ft horizontally of cooking appliances and no closer than 3ft to bathroom doors (with a bathtub or shower), mechanical registers or ceiling fans.
- Alterations, repairs, or additions exceeding 1,000 dollars. (May be battery operated.)

All smoke and carbon-monoxide alarms shall be hardwired with a battery backup (**smoke alarms shall have a 10-year sealed battery**). (R314.4 & R315.15)

All branch circuits supplying 15/20 ampere outlets in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, **kitchen, laundry areas** or similar rooms/areas shall be protected by a listed **combination type arc-fault circuit interrupter**.

All 15/20 ampere receptacles in wet locations shall have **in-use (bubble) covers** installed. All receptacles in wet locations shall also be listed **weather-resistant type**. (CEC 406.9(B)(1))

All lighting/fan fixtures located in wet or damp locations shall be rated for the application. (CEC 410.10)

Minimum 3-lug **intersystem bonding busbar** required for electrical services per CEC 250.94.

LIGHTING (2019 CEC)

All **high efficacy light fixtures** shall be certified as "high-efficacy" light fixtures by the California Energy Commission.

Luminaries recessed in insulated ceilings must meet three requirements (150(k)(1)):

- They must be rated for direct insulation contact (IC).
- They must be certified as airtight (AT) construction.
- They must have a sealed gasket or caulking between the housing and ceiling to prevent flow of heated or cooled air out of living areas and into the ceiling cavity.
- **Recessed downlights shall not have screw based sockets.**

All interior and exterior lighting shall be certified as "high efficacy." (150.0(k)1(A))

Lighting installed in **garages, laundry rooms, bathrooms and utility rooms** shall have high efficacy lighting **AND** a minimum of 1 fixture controlled by a vacancy sensor. (150.0(k))

Exterior lighting shall be high efficacy, controlled by a manual ON and OFF switch, and comply with one of the following: (150.0(k)(3))

- Photo-control with motion sensor not having an override or bypass switch.
- Astronomical time clock not having an override or bypass switch.
- Photo-control and automatic time switch control not having an override or bypass control.

The number of blank electrical boxes over 5ft above the floor is limited to the total number of bedrooms. The boxes shall be served by a dimmer, vacancy sensor or fan speed control. (150.0(k)(1)(B))

All under-cabinet lighting shall be separately switched. (150.0(k)(2)(K))

Contractor to provide homeowner with a luminaire schedule giving the lamps used in luminaries installed. (10-103(b))

CF2R-LTG-01-E energy forms onsite at time of final inspection.

PLUMBING (2019 CPC)

Provide pressure relief valve with drain to outside for **water heater** (CPC 504.6). Provide seismic strapping in the upper & lower third of the water heater a minimum of 4" above controls. (CPC 507.2)

Gas line sizing calculations are required at time of gas line inspection per the CA Plumbing Code when instantaneous water heaters are installed.

Gas shut-off valves provided within 6ft of appliances in an accessible location. (CPC 1212.5)

Water heaters located in attics, ceiling assemblies and raised floor assemblies shall show a water-tight corrosion resistant pan minimum 1.5" in depth under the water heater with a minimum 3/4 inch drain to the exterior of the building.

Underground plastic water service lines require 14awg blue tracer wire. (604.10.1)

Rain gutters and downspouts required for projects below 4,000ft elevation with approved leaf/debris guards.

Water closet shall be located in a space not less than 30" in width, with 24" minimum clearance in front (CPC 402.5).

Showers and tubs with showers require a non-absorbent surface up to 6' above the floor. (R307.2) Provide curtain rod or door a minimum of 22" in width (CPC 408.5).

Maximum hot water temperature discharging from a bathtub or whirlpool bathtub filler shall not exceed 120 degrees F. (CPC 409.4)

Provide anti-siphon valves on all hose bibs (CPC 603.5.7).

Fixtures on floor levels below the closest upstream manhole and/or septic system shall be provided with an approved backwater valve. Fixtures on floor levels above shall not discharge into the backwater valve. (CPC 710)

Fixture **water flow rates** per the CPC:

- Water Closets: 1.28gpf
- Urinals: .125gpf
- Kitchen Faucets: 1.8gpm @ 60psi
- Lavatory Faucets: **1.2gpm** @ 60psi
- Showerheads: **1.8gpm**

Insulate first 5ft of hot/cold water lines from water heater, **all hot water lines**, all recirculation piping and piping to storage tanks (150(j)(2))

Gas vents through an insulated assembly shall have a metal insulation shield extending 2" above insulation. (R1005.8)

CF2R-PLB-02b energy forms onsite at time of final inspection.

MECHANICAL (2019 CMC)

Wood burning appliances shall be U.S. EPA Phase II listed.

Provide combustion air for all gas fired appliances per CMC Chapter 7.

Vent **dryer** to outside of building with maximum vent length of 14ft and terminating 3ft to openings into the building and property lines. (CMC 504.4) Provide minimum 100sq. inches of makeup air for laundry rooms. (CMC 504.4.1)

Hood exhausts shall terminate 10ft from property lines, buildings, operable openings and above grade. Shall also be directed a minimum of 40" away from the roof surface. (519.5)

Heating system is required to maintain 68 degrees at 3ft above floor level & 2ft from exterior walls. (R303.10)

Duct openings shall be covered with tape, plastic or other approved methods during construction (CGBSC 4.504)

Appliances in garages require protection (bollard) from vehicles unless 6ft above the floor or out of vehicular paths (406.2.9.3)

Applicable CF2R-MCH & CF3R-MCH energy forms onsite at time of final inspection.