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***"Partnering to Improve Consistency & Customer Service"***

## 2019 CA Building Standards Code Substantial Changes Quick Reference Guide

***(Effective January 1, 2020)***

***Please keep in mind this is not an all-inclusive list of changes and/or requirements in the 2019 CA Building Standards Codes. This document is meant only as a quick reference for some of the substantial changes in the standards. Code sections are shown at the end of each referenced change so you can reference and review the specific code language.***

### **2019 CA Building Code Substantial Changes:**

- Greenhouses for the purpose of conservation and exhibition of plants that provide public access is a group A-3 occupancy. (303.4)
- Greenhouses for display/sale that provide public access are a M occupancy (309.1).
- A room or space used for storage and accessory to another occupancy is now a S occupancy type and not limited to 100sqft maximum in size (311.1.1).
- Self-service mini-storage added to S-1 Occupancy list (311.2)
- Communication equipment storage structures less than 1,500sqft are added to U Occupancy list (312.1)
- Automatic garage door and vehicle gates require battery backup for emergency operation (406.2.1)
- Appliances in private garages and carports shall be installed with a minimum clearance of 6ft above the floor unless they are protected from vehicular impact (406.2.9.3)
- Added mezzanine standards for dwelling units to have fire sprinklers or be no more than ½ the floor area of the room (505.2.1(3))
- Single story non-sprinklered greenhouses allowable area increased for type VB construction (Table 506.2 (i)).
- Minimum distance from projections to lines used to determine fire separation distance has been substantially decreased (T 705.2).
- Fire walls are no longer required on lot lines dividing a building for ownership purposes where the conditions are met per 706.1.1 exception 2.
- Operable skylights shall be protected by a non-combustible mesh screen with max 1/8" openings when required to comply with WUI requirements. (708A.2.2)
- Garage doors shall have a maximum gap at the bottom, top and sides of doors of 1/8" when required to comply with WUI requirements (708A.4)
- Added specific requirements related to fire pump/fire sprinkler riser rooms for access, signage, conditioning, and lighting (902)
- Added specific requirements for NFPA 13R fire sprinkler systems for attic spaces (903.3.1.2.3)
- Added automatic water mist systems to the list of allowed commercial cooking fire suppression systems (904.12)

- A manual fire alarm system is now required for A occupancies with occupant loads of 100 above or below the level of exit discharge (907.2.1).
- Occupant load factor for business areas was changed to 150 (from 100) except concentrated business use areas then the factor is 50 (T 1004.5)
- Required emergency exit lighting at areas of exit discharge to the safe dispersal area (street, dispersal area, etc) (1008.2.3).
- Egress windows are not required from sleeping rooms where one means of egress and one egress opening is provided or two means of egress are provided in the basement. (1030.1)
- Added a specific section for regulations associated to metal roof shingles (1504.3.3)
- Added specific requirements for building-integrated photovoltaic roof panels (1507.18)
- Added structural deflection limits for framing supporting glass (1604.3.7)
- A lateral load of 5psf is required to be designed for fire walls (1607.15.2)
- Verbiage for “ultimate” design wind speeds are now called “basic” wind speeds (1609)
- Wind speed tables changed specific to risk categories (Figures 1609.3(1) – (4))
- Earthquake loading site coefficients updated based on the most recent seismic mapping (1613)
- Special inspections are now required for wood trusses 60” or greater in overall height to verify required bracing requirements (1705.5.2).
- Special inspections are now required in seismic design categories C through F to verify required clearances from plumbing, mechanical and electrical equipment from fire sprinkler systems (1705.12.6).
- 8d common or deformed shank are required for 3/8”-1/2” roof sheathing nailed at 6/12 (T-2304.10.1)
- Staples in preservative treated wood and fire retardant treated wood are required to be stainless steel (2304.10.5)
- Header/girder conventional framing span tables revised for a column to include a narrower building width option (T-2308.4.1.1(1) & (2))
- Single member headers now allowed per 2308.5.5.1 for exterior bearing walls.
- Additional communication elements are required in accessible elevators to enhance two-way communication (3001.2)
- Added section and specific code requirements to relocatable buildings (commercial coaches) (3113)
- Primary Reference Standards:
  - ACI 318-14 (structural concrete)
  - TMS 402/602-16 (structural masonry)
  - ASCE 7-16 (Design loads for buildings/structures)

### **2019 CA Residential Code Substantial Changes:**

- Certain types of care facilities with five or fewer persons added to *Regulated buildings, structures and applications* (1.1.3.2)
- Exterior balconies and elevated walking surfaces exposed to water, where structural framing is protected by an impervious moisture barrier require construction documents with manufacturer’s installation instructions (R106.1.5). Must be inspected and approved before concealing barrier. (R109.1.5.3)
- Definition of “Accessible” and “Readily Accessible” changed to “Access To” and “Ready Access To” (R202)
- Added double fire wall option when separating townhouses (R302.2.1)
- Protection (ex: gypsum board) required on underside of floor assembly over crawl space with fuel-fired or *electric-powered* heating equipment. (R302.13)

- Safety glazing required on a wall *less than 180 degrees* from the plane of the door in a closed position and within 24” of hinge side of an in-swing door. (R308.4.2)
- Structural glass baluster panel guards require an attached top rail spanning not less than three panels unless it is laminated glass with two equal thickness glass plies (R308.4.4.1)
- If automatic sprinkler system, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
  1. One means of egress complying with Section R311 and one emergency escape and rescue opening.
  2. Two means of egress complying with Section R311 (R310.1)
- “Bulkhead Enclosure” replaced with “Area Well” for emergency escape and rescue (R310.3.2)
- Flight of stairs shall not have vertical rise larger than 151” (*was 147”*) between floor levels or landings (R311.7.3)
- Handrail shall not project more than 6.5” into stairway where nosings project into the stairway (R311.7.8.2)
- Alternating tread devices and ships ladders are allowed as a means of egress for lofts, mezzanines and similar areas of 200 gross sqft or less that do not provide exclusive access to a kitchen or bathroom (R311.7.11 & R311.7.12)
- Interconnection of CO alarms not required for buildings prior to January 1, 2011 under certain conditions. (R315.5)
- Enclosed framing in exterior balconies and elevated walking surfaces exposed to rain, snow or drainage from irrigation shall be provided with cross-ventilation area of at least 1/150. (R317.1.6)
- Roofs shall be structurally designed that have photovoltaic panels with the following criteria (R324.4.1.1):
  - Dead load (including PV panel weight) plus snow load.
  - Dead load (excluding PV panel weight) plus roof live load or snow load, whichever is greater.
- PV arrays occupying  $\leq 33\%$  of roof area require 18” setback on both sides of a ridge (no sprinklers) (R324)
- PV arrays occupying  $> 33\%$  of roof area require 36” setback on both sides of a ridge (no sprinklers) (R324)
- PV arrays occupying  $\leq 66\%$  of roof area require 18” setback on both sides of a ridge (sprinklers) (R324)
- PV arrays occupying  $> 66\%$  of roof area require 36” setback on both sides of a ridge (sprinklers) (R324)
- Panels & modules shall not be below an emergency escape and rescue opening within 36” (R324.6.2.2)
- Mezzanines shall not be greater than 1/3 of the floor area of the room. **Exception:** May be 1/2 the floor area if sprinklers installed and is open, unobstructed, and exceptions to R325.5 not applied. (R325.3)
- “Heavy timber” as exterior wall covering in WUI changed to “Sawn lumber or glue laminated wood” with the smallest minimum nominal dimension of 4”. Sawn or glue-laminated planks splined, tongue-and-groove, or set close together and well spiked R337.7.3. Structural columns and beams meeting these requirements are exempt from WUI requirements for *underside of appendages* (R337.7.9)
- Operable skylights shall be protected by a noncombustible mesh screen 1/8” max openings (R337.8)
- Garage door perimeter gap maximum 1/8”. Metal flashing, jamb and header overlap, and weather stripping meeting section requirements permitted. (R337.8.4)
- *Unvented crawl space* added dehumidification of 70 pints moisture per day per 1,000 sqft to requirement for exemption (R408.3).
- Allowance added to not have concrete footings for freestanding decks less than 200sqft and meeting other specific requirements (R507.3.2)
- Lag screws 1/2” and larger are required to be pre-drilled (T-R507.2.3 fn. d)
- Footing table added for deck piers up to a 70lb snow load (based on tributary areas) (T-R507.3.1)
- Deck joists bearing on single-ply beams or ledgers shall be attached with a mechanical connector (R507.6.1)
- Added alternate conventionally framed wall stud sizes, heights and spacing table up to 12ft in height (T-R602.3(6))

- Braced wall vertical panel joints shall occur over common studs (with stitch nailing requirements for double studs of (2) 10d's at 10"o.c.). Horizontal panel edges shall be blocked unless certain conditions are met (R602.10.4.4)
- Lath not required for stucco over masonry, concrete or stone substrates in accordance with ASTM C1063. (R703.7.1)
- Roof sheathing can only cantilever 9 inches beyond a gable end wall unless supported by overhang framing (R802.5.2.1)
- Each piece of fire-retardant-treated lumber and wood structural panel shall be labeled (R802.1.5.4)
- Eave ventilation to meet 1/300 exception shall now be located in the *lower 1/3* of attic space. (R806.2)
- Added requirements for air-permeable insulation installed in unvented attics in Climate Zones 3-15 (R806.5)
- Added specific requirements for photovoltaic roof shingles (Chapter 9)
- Insulation shield required for factory-built chimneys (R1005.8)
- **Tiny Houses Appendix Chapter Q added (101-105)**
  - Single dwelling unit max 400sqft excluding lofts.
  - *Ceiling height*: Habitable space and hallways min 6'8" ceiling height. Bathrooms, toilet rooms, kitchens and obstructions (beams, ducts, lighting etc.) min 6'4". **Exceptions**: :Lofts may be less than 6'8"
  - *Lofts* minimum 35sqft floor area with minimum 5' horizontal length in any direction. Lofts with sloped ceiling less than 3' from floor do not contribute to minimum floor area. **Exceptions**: Under gable roofs with min. 6:12 slope, only portions <16" do not contribute to floor area.
  - *Stairways [loft access]*: Width 17" min at or above handrail, 20" below the handrail. 6'2" headroom. Risers 7-12". Tread depth and Riser height calculated with one of the formulas:
    - Depth = 20" – 4/3 Riser height
    - Height = 15" – 3/4 Tread depth
  - *Landing Platforms*: The top tread and riser of stairways accessing lofts shall be constructed as a landing platform where the loft ceiling height is less than 6'2" where the stairway meets the loft. The landing platform shall be 18-22" in depth measured from the nosing of the landing platform to the edge of the loft, 16-18" in height measured from the landing platform to the loft floor.
  - *Ladders*: Rung width 12" min., 10-14" spacing between rungs. Shall support 200lb load on any rung. 3/8" max variation. Ladders 70-80 degrees from horizontal.
  - *Alternating tread & Ships ladders*: 20" width below handrail
  - *Loft guards*: Along open side of lofts. Min 36" or 1/2 clear height to ceiling, whichever is less.
  - *Emergency Escape and Rescue* must meet Sec. R310. **Exception**: Egress roof access windows in lofts used as sleeping rooms shall be deemed to meet requirement of R310

### **2019 CA Plumbing Code Substantial Changes:**

- Definition change of appliance to include a device that utilizes compressed fuel gas. (Ch. 2)
- All non-compliant fixtures shall be replaced with water conserving plumbing fixtures. (Changed from when undergoing alterations) (401.3)
- Shower head flow rates reduced from 2.0gpm to 1.8gpm. (408.2.1)
- Shower receptor slope reduced to 1/8" per foot of slope from 1/4" (408.5)
- Flushometer toilets reduced to 1.28 gallons per flush from 1.6 gallons. (411.2.2)
- Tracer wire size increased from 18awg to 14awg for underground water supply lines. (604.10.1)
- The volumetric flow rate of gas to be provided shall be adjusted for altitude when the installation is above 2000 ft. Old language just mentioned to adjust for altitude. (1208.4.1)
- Thermostatic mixing valves required for emergency eyewash stations. (416.2)
- Gas piping installed on roof surfaces shall be elevated above the roof surface and properly supported. (1210.2.4.3)

- CSST bonding jumper point of connection shall not exceed 75ft from the grounding electrode system. (1211.2.3)

### **2019 CA Mechanical Code Substantial Changes:**

- Unlisted appliances must be approved by the AHJ (303.3)
- Flexible Air Ducts installation shall comply with the following (603.5)
  - Ducts shall be installed using the minimum required length to make the connection
  - Horizontal duct runs shall be supported at not more than 4' intervals
  - Vertical risers shall be supported at not more than 6' intervals
  - Sag between support hangers shall not exceed 1/2" per foot of support spacing
  - Supports shall be ridged and shall be not less than 1 1/2" wide at the point of contact with the duct surface.
  - Ducts bends shall not be less than one duct diameter bend radius.
  - Screws shall not penetrate the inner liner of non-metallic flexible duct unless permitted in accordance with the manufacturer.
  - Fittings for attaching non-metallic ducts shall be beaded and have a collar length of not less than 2" for attaching ducts (exception:
    - Duct inner liner shall be installed not less than 1" on the collar and past the bead prior to the application of the tape and mechanical fastener.
    - Duct outer vapor barrier shall be secured using two wraps of approved tape. A mechanical fastener shall be permitted to be used in place of or in combination with the tape.
- Above Ceiling or Non Ducted Air Handling System (802.3.6)
  - The venting system shall be a listed special gas vent, other system serving a Category III or Category IV appliance, or other positive pressure vent, with joints sealed in accordance with the appliance or vent manufacturer's instructions
  - The vent system shall be installed such that no fittings or joints between sections are installed in the above –ceiling space.
  - The venting system shall be installed in a conduit or enclosure with joints between the interior of the enclosure and the ceiling space sealed.
- Combustible Material Adjacent to Cooktop – Maintain clearance horizontally for 18" at 2' above cooktop (918.5)
- Tankless water heater must be rated by the manufacturer for space heating applications. (1203.3)
- Max Gas Demand – Volumetric flow rate shall be adjusted for altitude where installation of appliance is over 2000ft related to gas line sizing. (1308.4.1)
- Hydronic installation requirements have substantially been revised in Chapter 12 (pressure testing standards, expansion tank requirements, etc).

### **2019 CA Electrical Code Substantial Changes:**

- This subdivision incorporates mandatory torque tightening requirements for electrical terminations in accordance with the manufacturer's instructions. (110.14 (D))
- The list of locations for GFCI receptacles in "other than dwelling units" is expanded to include receptacle outlets in crawl spaces and receptacles in unfinished basements. (210.8 (B)) Also now required for drinking coolers, spray washing machines, tire inflation machines provided for public use, and vending machines. (422.5)
- Arc fault protection is now required in guest rooms and guest suites. (210.12 (C))
- All meeting rooms of not more than 1,000 square feet in other than dwelling units are now required to have receptacle outlets installed. Floor and wall receptacles required. (210.71)

- Added “work surfaces” to countertop receptacle requirements in kitchens, pantries, breakfast rooms, dining rooms, and similar areas. (210.52(C))
- Each required garage receptacle shall be installed no higher than 5 1/2’ above the floor. (210.52(G))
- Indoor service equipment (not in one-two family dwellings) requires a 15/20 amp receptacle in the same room/area and within 25ft of the equipment. (210.64)
- Receptacles with USB Charger, permits these devices to be installed if they are listed and constructed per ANSI/UL 498 (406.3 (F))
- New occupancies have been added to the receptacle tamper-resistant requirements: Preschools and elementary education; business offices; corridors; waiting rooms and the like in clinics, medical and dental offices and outpatient facilities; assembly occupancies described in Section 518.2; and dormitories. (406.12)
- Flexible cords supplying trash compactors are permitted to be between 3–4 feet long. A longer, flexible cord to facilitate connection for dishwashers in an adjacent space is permitted to be between 3–6½ feet long. The receptacle for a trash compactor must be located in the space occupied by the appliance or adjacent, and the receptacle for a built-in dishwasher must be located in the space adjacent to the space occupied by the dishwasher. (422.16 (B)(2))
- Section 440.9 now requires a “wire-type” equipment grounding conductor (EGC) for outdoor portions of metallic raceway systems that use non-threaded fittings installed on a roof. (440.9)
- Omitted underground conduit clearances and depths associated to swimming pools. Now all installations are in accordance with Table 300.5. (680.11)
- A photovoltaic array boundary is established with requirements for circuits outside and inside the array boundary. Three rapid-shutdown methods are provided for circuits inside the array boundary. Changed rapid shutdown voltage limitation length of time to 30 seconds (was 10 seconds) (690.12)
- Marking requirements for rapid shutdown were significantly revised to warn emergency responders of hazards presented by a PV system and associated conductors. (690.56 (C))
- Added Article for Large-Scale Photovoltaic Electric Power Production Facilities (Art. 691)
- Exposed raceways and cable systems that are part of an emergency circuit shall be labelled for that use at 25ft intervals. Receptacles supplied by an emergency circuit shall marked with a distinctive color (700.10).
- Changed “inverter output” verbiage to “power source output” that changes some labelling. For example; the label for two power sources with overcurrent protection on opposite ends of the busbar shall state, “WARNING: POWER SOURCE OUTPUT CONNECTION – DO NOT RELOCATE THIS OVERCURRENT DEVICE” (705.12).
- Interconnected power sources (PV, etc) are allowed in center-fed busbar panels if the connection is made at either end, not both ends of the busbar and does not exceed 120 percent of the busbar rating (705.12(B)(2)(3)(d)).

## **2019 CA Energy Code Substantial Changes:**

### Approved Software Programs

- Residential: CBECC-Res 2019.1.0  
Energy Pro Version 8.0
- Commercial: CBECC-Com 2019.1.0

### Residential Mandatory Measures

- 2x6 framed walls require R-20 insulation (150.0(c)2)
- Minimum heating/cooling system filter ratings increased to MERV 13 (150.0(m)12)
- Requirement for utility ready efficient water heater requirement has been revised to require the installation of a dedicated 120/240, 3 wire circuit with 10AWG wire to the receptacle outlet within 3ft of

the water heater. The unused conductor shall be electrically isolated and have a reserved circuit breaker space (150.0(n))

#### Residential Prescriptive Measures

- Quality Insulation Installation (QII) is now a prescriptive requirement in all climate zones for new construction and additions over 700sqft. (150.1(c)1E)
- Installation of solar electric generation photovoltaic requirements unless one of the exceptions are met (shading being the primary exception in the foothills) (150.1(c)14)
- Roof insulation level increased to R-19 for Option B, below deck insulation between roof rafters (except Zones 10 and 16 (eastern Nevada County)) (150.1)
- Fenestration U-factor changed to .30 and SHGC to .23. (150.1)
- Opaque exterior doors to have a maximum U-factor of .20. When 25% or more of the door has glazing, the door shall meet window efficiency values (150.1)
- Additions less than 700sqft shall have a minimum roof insulation value of R-38 in Climate Zones in 1 & 11-16 and radiant barrier is mandatory for Climate Zones 2-10 (150.1(c))

#### Commercial Mandatory Measures

- Occupancy sensing controls required for restrooms (130.1(c)5)

#### Commercial Prescriptive Measures

- Directly conditioned space with operable wall or roof openings to the outdoors shall be provided with interlocking controls for temperate setback. Exceptions for doors with automatic closers and/or spaces without thermostatic control (140.4(n))
- Lighting power allowances have been reduced approximately 29%-37% overall encouraging more exterior lighting usage. (140)