



| | | | CZ 11 | CZ 12 | CZ 13 | CZ 16 | Comments | | | | |
|------------------------------------|--|------------------------|---|---|---|---|---|----------------------------|-----------|---------------|-----------|
| Insulation | Roofs ^A / Ceilings | | Opt B ^D With Air Space | R-19 b.r.d. R-38 ceiling No Rad Barrier | R-19 b.r.d. R-38 ceiling No Rad Barrier | R-19 b.r.d. R-38 ceiling No Rad Barrier | R-19 b.r.d. R-38 ceiling No Rad Barrier | | | | |
| | | | Opt C | R-38 ceiling Rad Barrier Ducts in cond. space | R-38 ceiling Rad Barrier Ducts in cond. space | R-38 ceiling Rad Barrier Ducts in cond. space | R-38 ceiling No Rad Barrier Ducts in cond. space | | | | |
| | Walls | | Above Grade | | Framed ^{A,E} | U-0.048 | U-0.048 | U-0.048 | U-0.048 | | |
| | | | Mass Wall Interior ^F | | U-0.077 | U-0.077 | U-0.077 | U-0.059 | | or higher | |
| | | | Mass Wall Exterior ^F | | U-0.125 | U-0.125 | U-0.125 | U-0.077 | | or higher | |
| | | | Below Grade | | Below-Grade Interior ^F | U-0.077 | U-0.077 | U-0.077 | U-0.067 | | or higher |
| | | | | | Below-Grade Exterior ^F | U-0.200 | U-0.200 | U-0.200 | U-0.053 | | or higher |
| | | | Floors | | Slab Perimeter | | NR | NR | NR | U-0.58 R-7 | |
| | Raised ^A | | | | U-0.037 | U-0.037 | U-0.037 | U-0.037 | | or higher | |
| | Concrete Raised | | | | U-0.092 | U-0.138 | U-0.092 | U-0.092 | | or higher | |
| | Quality Insulation Installation (QII) | | | YES | YES | YES | YES | Requires HERS verification | | | |
| | Roofing Products | Low-sloped | Aged Solar Reflectance | NR | NR | 0.63 | NR | | or higher | | |
| | | | Thermal Emittance | NR | NR | 0.75 | NR | | or higher | | |
| Steep-sloped | | Aged Solar Reflectance | 0.20 | 0.20 | 0.20 | NR | | or higher | | | |
| | | Thermal Emittance | 0.75 | 0.75 | 0.75 | NR | | or higher | | | |
| Fenestration | Maximum U factor ^G | | 0.30 | 0.30 | 0.30 | 0.30 | | | | | |
| | Maximum SHGC ^H | | 0.23 | 0.23 | 0.23 | NR | | | | | |
| | Maximum Total Area | | 20% | 20% | 20% | 20% | | | | | |
| | Maximum West Facing Area | | 5% | 5% | 5% | NR | | | | | |
| Doors | Maximum U factor | | 0.20 | 0.20 | 0.20 | 0.20 | Doors with ≥ 25% glazed area must meet applicable fenestration requirements (Section 100.1(b)). Doors require NFRC labels per Section 110.6(a)2 | | | | |
| Space Heating^B | Electric-Resistance Allowed | | No | No | No | No | | | | | |
| | If gas, AFUE | | MIN | MIN | MIN | MIN | Residential gas furnaces <225 kbtuh: • Nonweatherized: 80% AFUE ^L • Weatherized: 81% AFUE ^L | | | | |
| | If Heat Pump, Heating Seasonal Performance Factor (HSPF) | | MIN | MIN | MIN | MIN | Single-phase air source • Split: <65 kbtuh 8.2 HSPF • Packaged: <65 kbtuh 8.0 HSPF or higher ^L | | | | |
| Space Cooling | SEER | | MIN | MIN | MIN | MIN | Central air conditioner or central air source heat pump • Split: <45 kbtuh 14.0 SEER/12.2 EER ≥45 but <65 kbtuh 14 SEER /11.7 EER • Packaged: <65 kbtuh 14 SEER/ 11 EER or higher ^L | | | | |
| | Refrigerant Charge Verification or Fault Indicator Display | | REQ | REQ | REQ | NR | | | | | |
| | Whole House Fan (WHF) ^I | | REQ | REQ | REQ | NR | | | | | |
| Central System Air Handlers | Central Fan Integrated Ventilation System Fan Efficacy | | REQ | REQ | REQ | REQ | | | | | |
| Ducts^C | Duct Insulation | | R-6 or R-8 ^K | R-6 or R-8 ^K | R-6 or R-8 ^K | R-6 or R-8 ^K | or higher | | | | |
| Water Heating | All Buildings | | • One or more Gas Instantaneous ≤ 200 kbtuh • One Gas Storage ≤ 55 gallons; ≤ 75 kbtuh ^M • One Gas Storage ≥ 55 gallons; ≤ 75 kbtuh • One Heat Pump Water Heater (HPWH) located in garage or conditioned space ^N • One HPWH NEEA Tier 3 or higher located in garage or conditioned space ^O | | | | | | | | |

Notes

- A The U-factors/R-values shown are for wood-frame construction with insulation installed between the framing members, with continuous insulation where appropriate. For alternative construction assemblies, see [Section 150.1\(c\)1A, B and C](#).
- B A supplemental heating unit may be installed in a space served directly or indirectly by a primary heating system, provided that the unit thermal capacity does not exceed 2 kW or 7,000 Btuh and is controlled by a time-limiting device not exceeding 30 minutes.
- C Duct sealing is a Mandatory Requirement in all climate zones, as confirmed through field verification and diagnostic testing. See [Section 150.0\(m\)11](#).
- D For Option B, where insulation directly below the roof deck is required, install R-19 (when specified) with an air space between the roofing and roof deck.
- E Any combination of cavity insulation and/or continuous insulation that results in a U-factor \leq the Prescriptive requirement is allowed.
- F Mass wall has a thermal heat capacity greater than or equal to 7.0 Btuh-ft². Below-grade “interior” denotes insulation installed on the inside surface of the wall. Below-grade “exterior” denotes insulation installed on the outside surface of the wall. Insulation R-values are for continuous insulation for both above and below grade.
- G The installed fenestration products shall meet the requirements of [Section 150.1\(c\)3](#). Specifically note exceptions in [Section 150.1\(c\)3A](#).
- H The installed fenestration products shall meet the requirements of [Section 150.1\(c\)4](#). Note that there are options provided for SHGC compliance in [Section 150.1\(c\)4](#).
- I When whole house fans (WHF) are required, only those listed in the [California Energy Commission’s Modernized Appliance Efficiency Database \(MAEDbS\)](#) may be installed. Compliance requires installation of one or more WHFs with total airflow capable of meeting or exceeding a minimum 1.5 cfm/ft² of conditioned floor area per [Section 150.1\(c\)12](#).
- J NR = No Requirement
- K For Climate Zones 8, 9 and 10, R-8 minimum is required if complying with Option B. If Option C is used, R-6 minimum and duct leakage testing is required.
- L For information about other HVAC equipment efficiency requirements, refer to [Chapter 4 of the 2019 Residential Compliance Manual](#).
- M Additionally, fenestration with a weighted average U-factor \leq 0.24, and one of the following:
a. HERS-verified compact hot water distribution system OR
b. HERS-verified drain water heat recovery system.
- N Additionally, the HPWH must be located in the garage or conditioned space and one of the following:
a. HERS-verified compact hot water distribution system and HERS-verified drain water heat recovery system OR
b. For Climate Zones 2-15, a photovoltaic system capacity of 0.3 kWdc > the Prescriptive sizing requirement ([Section 150.1\(c\)14](#)).
c. For Climate Zones 1 and 16, a photovoltaic system capacity of 1.1 kWdc > the Prescriptive sizing requirement ([Section 150.1\(c\)14](#)).
- O Additionally, the HPWH must be located in the garage or conditioned space, and, for Climate Zones 1 and 16, a photovoltaic system capacity of 0.3 kWdc > the Prescriptive sizing requirement ([Section 150.1\(c\)14](#)), or HERS-verified compact hot water distribution system.

For more information

- See Energy Code Ace Quick Reference Sheets:
energycodeace.com/content/resources-fact-sheets/
 - Residential Heating & Cooling Equipment Minimum Efficiencies 2019
 - Short Glossary of Terms 2019



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