2019 ENERGY CODE

Ace Resources

Title 24, Part 6
Climate Zone Quick Reference

Compliance Baseline
Low-Rise Residential - Single Family Only - §150.1
Climate Zones 5, 6, 7, 8, 9 & 10

				CZ 5	CZ 6	CZ 7	CZ 8	CZ 9	CZ 10	Comments
Insulation	Roofs [A]		Opt B With Air Space [D]	No b.r.d. R-30 ceiling Rad Barrier	No b.r.d. R-30 ceiling Rad Barrier	No b.r.d. R-30 ceiling 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 [K]	R-30 ceiling Rad Barrier Ducts in cond. space	R-30 ceiling Rad Barrier Ducts in cond. space	R-30 ceiling Rad Barrier Ducts in cond. space	R-30 ceiling Rad Barrier Ducts in cond. space	R-30 ceiling Rad Barrier Ducts in cond. space	R-30 ceiling Rad Barrier Ducts in cond. space	
	Walls	Above Grade	Framed [A, E]	U-0.048	U-0.065	U-0.065	U-0.048	U-0.048	U-0.048	
			Mass Wall Interior [F]	U-0.077	U-0.077	U-0.077	U-0.077	U-0.077	U-0.077	
				R-13	R-13	R-13	R-13	R-13	R-13	or higher
			Mass Wall Exterior [F]	U-0.125	U-0.125	U-0.125	U-0.125	U-0.125	U-0.125	
				R-8	R-8	R-8	R-8	R-8	R-8	or higher
		Below Grade	Below-Grade Interior [F]	U-0.077	U-0.077	U-0.077	U-0.077	U-0.077	U-0.077	
				R-13	R-13	R-13	R-13	R-13	R-13	or higher
			Below-Grade Exterior [F]	U-0.200	U-0.200	U-0.200	U-0.200	U-0.200	U-0.200	
				R-5	R-5	R-5	R-5	R-5	R-5	or higher
	Floors	Slab Perimeter		NR [J]	NR	NR	NR	NR	NR	
		Raised [A]		U-0.037	U-0.037	U-0.037	U-0.037	U-0.037	U-0.037	
				R-19	R-19	R-19	R-19	R-19	R-19	or higher
		Concrete Raised		U-0.269	U-0.269	U-0.269	U-0.269	U-0.269	U-0.269	
				R 0	R 0	R 0	R 0	R 0	R 0	or higher
Quality Insulation Installation (QII)				YES	YES	YES	YES	YES	YES	Requires HERS verification
Roofing Products	Low-sloped	Aged Solar Reflectance		NR	NR	NR	NR	NR	NR	
		Thermal Emittance		NR	NR	NR	NR	NR	NR	
	Steep-sloped	Aged Solar Reflectance		NR	NR	NR	NR	NR	0.20	or higher
		Thermal Emittance		NR	NR	NR	NR	NR	0.75	or higher
Fenestration	Maximum U factor [G]			0.30	0.30	0.30	0.30	0.30	0.30	
	Maximum SHGC [H]			NR	0.23	0.23	0.23	0.23	0.23	
	Maximum Total Area			20%	20%	20%	20%	20%	20%	
	Maximum West Facing Area			NR	5%	5%	5%	5%	5%	
Doors	Maximum U factor			0.20	0.20	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, C]	Electric-Resistance Allowed			No	No	No	No	No	No	
	If gas, AFUE			MIN	MIN	MIN	MIN	MIN	MIN	Central furnace: ≥225 kBtuh 78% AFUE or higher [L]
	If Heat Pump, Heating Seasonal Performance Factor (HSPF)			MIN	MIN	MIN	MIN	MIN	MIN	Single-phase air source • Split: <65 kBtuh 8.2 HSPF [L] • Packaged: <65 kBtuh 8.0 HSPF or higher [L]
Space Cooling [C]	SEER			MIN	MIN	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			NR	NR	NR	REQ	REQ	REQ	
	Whole House Fan (WHF) [I]			NR	NR	NR	REQ	REQ	REQ	
Central Sys. Air Handlers	Central Fan Integrated Ventilation System Fan Efficacy			REQ	REQ	REQ	REQ	REQ	REQ	
Ducts [C]	Duct Insulation			R-6	R-6	R-6	R-6 or R-8 [L]	R-6 or R-8 [L]	R-6 or R-8 [L]	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 R-19 insulation is required to be installed directly below the roof deck, the roofing material must provide an air space between the roofing and the roof deck (i.e., tile roofing).

E Any combination of cavity insulation and/or continuous insulation that results in a U-factor ≤ the Prescriptive requirement is allowed. See Joint Reference Appendix JA4 for construction assemblies that comply with Energy Code requirements.

F Mass wall has a thermal heat capacity greater than or equal to 7.0 Btuh-ft^2. 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 must meet the requirements of Section 150.1(c)3. Specifically note exceptions in Section 150.1(c)3A.

H The installed fenestration products must 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/ft^2 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 ≤ 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 (Section150.1(c)14).
   c. For Climate Zones 1 and 16, a photovoltaic system capacity of 1.1 kWdc > the Prescriptive sizing requirement (Section150.1(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 (Section150.1(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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