



*U-factor (or U) = maximum value; R-value (R) = minimum value*

Building Feature			CZ 3	CZ 4	CZ 13	CZ 14	
Insulation	Roofs and Attics <sup>(A)</sup>	Option B: Ducts in Vented Attic <sup>(B)</sup>	Ceiling	R-30	R-38	R-38	R-38
			Below Roof Deck	Not Required	R-19	R-19	R-19
			Radiant Barrier	Required	Not Required	Not Required	Not Required
		Option C: Ducts in Conditioned Space	Ceiling	R-30	R-30	R-38	R-38
			Radiant Barrier	Required	Required	Required	Required
	Walls	Above Grade	Framed <sup>(A) (C)</sup>	U-0.048	U-0.048	U-0.048	U-0.048
			Mass Wall: Interior <sup>(D)</sup>	U-0.077	U-0.077	U-0.077	U-0.077
				R-13	R-13	R-13	R-13
			Mass Wall: Exterior <sup>(D)</sup>	U-0.125	U-0.125	U-0.125	U-0.125
		R-8		R-8	R-8	R-8	
		Below Grade	Interior <sup>(D)</sup>	U-0.077	U-0.077	U-0.077	U-0.077
				R-13	R-13	R-13	R-13
			Exterior <sup>(D)</sup>	U-0.200	U-0.200	U-0.200	U-0.100
	R-5			R-5	R-5	R-10	
	Floors	Slab Perimeter		Not Required	Not Required	Not Required	Not Required
		Raised <sup>(A)</sup>		U-0.037	U-0.037	U-0.037	U-0.037
				R-19	R-19	R-19	R-19
			U-0.269	U-0.269	U-0.092	U-0.092	
Concrete Raised		R-0	R-0	R-8	R-8		
<b>Quality Insulation Installation (QII)</b>			HERS Verification Required				
Roofing Products	Low-sloped	Minimum Aged Solar Reflectance	Not Required	Not Required	0.63	Not Required	
		Minimum Thermal Emittance	Not Required	Not Required	0.75	Not Required	
	Steep-sloped	Minimum Aged Solar Reflectance	Not Required	Not Required	0.20	0.20	
		Minimum Thermal Emittance	Not Required	Not Required	0.75	0.75	
Fenestration	Maximum U-factor <sup>(E)</sup>		0.30	0.30	0.30	0.30	
	Maximum Solar Heat Gain Coefficient (SHGC) <sup>(F)</sup>		Not Required	0.23	0.23	0.23	
	Maximum Total Area		20%	20%	20%	20%	
	Maximum West-facing Area		Not Required	5%	5%	5%	
Doors <sup>(G)</sup>	Maximum U-factor		0.20	0.20	0.20	0.20	

Building Feature		CZ 3	CZ 4	CZ 13	CZ 14	
Space Heating <sup>H</sup>	Electric Resistance Systems	Not Allowed				
	Minimum Annual Fuel Utilization Efficiency (AFUE) for Gas-fueled Systems	Not Allowed <sup>L</sup>				
	Minimum Heating Seasonal Performance Factor (HSPF or HSPF2) for Heat Pumps Single-phase Air Source	Manufactured before 1/1/2023: ✦ Split: < 65 kBtuh 8.2 HSPF <sup>J</sup> ✦ Packaged: < 65 kBtuh 8.0 HSPF <sup>J</sup> Manufactured on or after 1/1/2023: ✦ Split: < 65 kBtuh 7.5 HSPF2 <sup>J</sup> ✦ Packaged: < 65 kBtuh 6.7 HSPF2 <sup>J</sup>				
Space Cooling	Heat Pumps: Seasonal Energy Efficiency Ratio (SEER/SEER2)	Manufactured before 1/1/2023: Packaged or Split: 14 SEER				
		Manufactured on or after 1/1/2023: ✦ Packaged: 13.4 SEER2 ✦ Split: 14.3 SEER2				
	Central Air Conditioning (SEER/SEER2 EER/EER2)	Installed before 1/1/2023: ✦ Packaged: 14 SEER/11.0 EER ✦ Split < 45: 14 SEER/12.2 EER ✦ Split ≥ 45: 14 SEER/11.7 EER				
		Installed on or after 1/1/2023: ✦ Packaged: 13.4 SEER2/10.6 EER2 ✦ Split < 45: 14.3 SEER2/11.7 EER2 ✦ Split ≥ 45: 13.8 SEER2/11.2 EER2				
		Refrigerant Charge Verification or Fault Indicator Display	Not Required	Not Required	Required	Required
Whole House Fan (WHF) <sup>K</sup>	Not Required	Not Required	Required	Required		
Central System Air Handlers	Central Fan Integrated (CFI) Ventilation System Fan Efficacy	If CFI used for outside air ventilation, HERS verification of fan efficacy is required.				
Duct Insulation <sup>L</sup>	Minimum R-value by Duct Location	Vented Attic	R-6	R-8	R-8	R-8
		Conditioned Space	R-6	R-6	R-6	R-6
Water Heating	<ul style="list-style-type: none"> <li>✦ One 240-volt heat pump water heater (HPWH) located in garage or conditioned space<sup>M</sup></li> <li>✦ One HPWH NEEA Tier 3 or higher<sup>M</sup></li> <li>✦ One solar water-heating (solar thermal) system with electric backup, minimum solar savings fraction of 0.7</li> <li>✦ One instantaneous electric water heater with point-of-use distribution for new dwelling units with conditioned floor area of 500 ft<sup>2</sup> or less<sup>N</sup></li> <li>✦ One gas or propane instantaneous water heater with an input of 200,000 Btuh or less and no storage tank.<sup>O</sup> This water-heating system requires an installed heat pump space-heating system and compliance with electric readiness requirements in §150.0(n). For information on electric readiness requirements see the <i>Residential Electric Readiness Fact Sheet</i> at <a href="http://bit.ly/ECA-building-fact-sheets">bit.ly/ECA-building-fact-sheets</a>.</li> </ul>					
Photovoltaic (PV) and Battery Systems	For information on PV and battery system requirements that apply to single-family buildings, see the <i>Energy Code Ace Single-family and Low-rise Multifamily Solar and Battery Systems Fact Sheet</i> at <a href="http://bit.ly/ECA-building-fact-sheets">bit.ly/ECA-building-fact-sheets</a> .					



# 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 [§§150.1\(c\)1A, B and C](#).
- B** 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).
- C** Any combination of cavity insulation and/or continuous insulation that results in a U-factor  $\leq$  the Prescriptive requirement is allowed. See [Joint Reference Appendix JA4](#) for construction assemblies that comply with Energy Code requirements.
- D** Mass wall has a thermal heat capacity greater than or equal to 7.0 Btu-ft<sup>2</sup>. For above and below grade mass walls, "interior" denotes insulation installed on the inside surface of the wall, "exterior" denotes insulation installed on the outside surface of the wall, and the Energy Code's Prescriptive Approach assumes that rigid continuous insulation is installed.
- E** The installed fenestration products must meet the requirements of [§150.1\(c\)3](#). Specifically note exceptions in [§150.1\(c\)3A](#).
- F** The installed fenestration products must meet the requirements of [§150.1\(c\)4](#).
- G** Doors with  $\geq 25\%$  glazed area must meet applicable fenestration requirements in [§100.1\(b\)](#).
- H** 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 Btu/h and is controlled by a time-limiting device not exceeding 30 minutes.
- I** Gas-fired space heating requires use of the Performance Approach for compliance.
- J** For information about other HVAC equipment efficiency requirements, refer to Chapter 4 of the [2022 Single Family Residential Compliance Manual](#).
- K** When whole house fans (WHF) are required, only those listed in the Home Ventilating Institute Certified Products Directory 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<sup>2</sup> of conditioned floor area per [§150.1\(c\)12](#). WHF are not required for dwelling units less than 500 ft<sup>2</sup>.
- L** Duct sealing is a Mandatory requirement in all Climate Zones, as confirmed through HERS field verification and diagnostic testing. See [§150.0\(m\)11](#). Ducts in conditioned space require that the duct systems and air handlers of HVAC systems be located in conditioned space and confirmed by field verification and diagnostic testing. See [Residential Reference Appendix RA3.1.4.3.8](#).
- M** A 120-volt heat pump water heater (HPWH) may be installed in place of a 240-volt HPWH for new dwelling units with one bedroom or less.

- N** More information on point-of-use distribution is specified in [Residential Reference Appendix RA4.4.5](#).
- D** Gas-fired water heating requires that heat pump space heating be installed. Gas-fired space heating requires use of the Performance Approach for compliance.

## For More Information

### CALIFORNIA ENERGY COMMISSION

[www.energy.ca.gov](http://www.energy.ca.gov)

#### 2022 Single-Family Residential Compliance Manual

[bit.ly/CEC-2022-SF-residential-compliance-manual](http://bit.ly/CEC-2022-SF-residential-compliance-manual)

#### Glossary

[bit.ly/2022-Energy-Code-Glossary](http://bit.ly/2022-Energy-Code-Glossary)



[www.energycodeace.com](http://www.energycodeace.com)

Stop by this online "one-stop-shop" for no-cost tools, training and resources designed to help you comply with California's Title 24, Part 6 and Title 20.

#### See Energy Code Ace Resources:

[energycodeace.com/content/resources-fact-sheets/](http://energycodeace.com/content/resources-fact-sheets/)

- ♦ Residential Heating & Cooling Equipment Minimum Efficiencies
- ♦ Single-family Building HVAC Additions and Alterations
- ♦ Single-family and Low-rise Multifamily Solar and Battery Systems
- ♦ Residential Electric Readiness



Check [EnergyCodeAce.com](http://EnergyCodeAce.com) for our latest 2022 tools, training and resources!

**Create an account on the Energy Code Ace site and select an industry role for your profile in order to receive messages about all our offerings!**



This program is funded by California utility customers and administered by Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE) under the auspices of the California Public Utilities Commission.

© 2022 PG&E, SDG&E and SCE. All rights reserved, except that this document may be used, copied, and distributed without modification. Neither PG&E, SDG&E, nor SCE – nor any of their employees makes any warranty, express or implied; or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product, policy or process disclosed in this document; or represents that its use will not infringe any privately-owned rights including, but not limited to patents, trademarks or copyrights. Images used in this document are intended for illustrative purposes only. Any reference or appearance herein to any specific commercial products, processes or services by trade name, trademark, manufacturer or otherwise does not constitute or imply its endorsement, recommendation or favoring.