2016 ENERGY CODE

Ace Resources

Title 24, Part 6
Climate Zone Quick Reference

Compliance Baseline (Package A)
Low-Rise Residential - §150.1
Climate Zones 7, 10, 14 & 15

				CZ 7	CZ 10	CZ 14	CZ 15	Comments
Insulation [A]	Roofs		Opt A No Air Space	No c.i.[K] R-30 ceiling Rad Barrier	R-8 c.i. R-38 ceiling Rad Barrier	R-8 c.i. R-38 ceiling Rad Barrier	R-8 c.i. R-38 ceiling Rad Barrier	
			Opt A With Air Space	No c.i. R-30 ceiling Rad Barrier	R-6 c.i. R-38 ceiling Rad Barrier	R-6 c.i. R-38 ceiling Rad Barrier	R-6 c.i. R-38 ceiling Rad Barrier	
			Opt B [E] No Air Space	No b.r.d.[K] R-30 ceiling Rad Barrier	R-18 b.r.d. R-38 ceiling No Rad Barrier	R-18 b.r.d. R-38 ceiling No Rad Barrier	R-18 b.r.d. R-38 ceiling No Rad Barrier	
			Opt B [E] With Air Space	No b.r.d. R-30 ceiling Rad Barrier	R-13 b.r.d. R-38 ceiling No Rad Barrier	R-13 b.r.d. R-38 ceiling No Rad Barrier	R-13 b.r.d. R-38 ceiling No Rad Barrier	
			Opt C	No c.i. R-30 ceiling Rad Barrier Ducts in cond. space	No c.i. R-30 ceiling Rad Barrier Ducts in cond. space	No c.i. R-38 ceiling Rad Barrier Ducts in cond. space	No c.i. R-38 ceiling Rad Barrier Ducts in cond. space	
	Walls	Above Grade	Framed [F]	U-0.065	U-0.051	U-0.051	U-0.051	
			Mass Wall Interior [G]	U-0.070	U-0.070	U-0.070	U-0.070	
				R-13	R-13	R-13	R-13	or higher
			Mass Wall Exterior [G]	U-0.125	U-0.125	U-0.125	U-0.125	
				R-8	R-8	R-8	R-8	or higher
		Below Grade	Below Grade Interior [G]	U-0.070	U-0.070	U-0.070	U-0.070	
				R-13	R-13	R-13	R-13	or higher
			Below Grade Exterior [G]	U-0.200	U-0.200	U-0.100	U-0.100	
				R-5	R-5	R-10	R-10	or higher
	Floors	Slab Perimeter		NR [L]	NR	NR	NR	
		Raised		U-0.037	U-0.037	U-0.037	U-0.037	
				R-19	R-19	R-19	R-19	or higher
		Concrete Raised		U-0.269	U-0.269	U-0.092	U-0.138	
				R-0	R-0	R-8	R-4	or higher
Roofing Products	Low-sloped	Aged Solar Reflectance		NR	NR	NR	0.63	or higher
		Thermal Emittance		NR	NR	NR	0.75	or higher
	Steep-sloped	Aged Solar Reflectance		NR	0.20	0.20	0.20	or higher
		Thermal Emittance		NR	0.75	0.75	0.75	or higher
Fenestration	Maximum U factor [H]			0.32	0.32	0.32	0.32	
	Maximum SHGC [I]			0.25	0.25	0.25	0.25	
	Maximum Total Area			20%	20%	20%	20%	
	Maximum West Facing Area			5%	5%	5%	5%	
Space Heating [B, C]	Electric-Resistance Allowed			No	No	No	No	
	If gas, AFUE			MIN	MIN	MIN	MIN	Central furnace: ≥225,000 kBtuh 80% AFUE or higher[N]
	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[N]
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[N]
	Refrigerant Charge Verification or Charge Indicator Display			NR	REQ	REQ	REQ	
	Whole House Fan [J]			NR	REQ	REQ	NR	
Central System Air Handlers	Central Fan Integrated Ventilation System Fan Efficacy			REQ	REQ	REQ	REQ	
Ducts [D]	Duct Insulation			R-6	R-6 or R-8 [M]	R6 or R-8 [M]	R-6 or R-8 [M]	or higher
Water Heating	All Buildings			Gas Storage ≤55 gallons; ≤105 kBtuh Tankless Instantaneous ≤200 kBtuh			Apr 16, 2015: 0.675-(0.0015*V) [O] EF [P] or higher	

Notes

A The U-factors/R-values shown for ceiling, wall and raised floor insulation 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 Furnaces shall have an electrical standby mode power consumption and electrical off mode power consumption not more than the following:

- Non-weatherized gas furnaces (not including mobile home furnaces)..... 10W
- Non-weatherized oil-fired furnaces (not including mobile home furnaces)..... 11W
- Electric furnaces 10W

Central air conditioners and central air conditioning heat pumps manufactured on or after January 1, 2015, shall have an average off mode electrical power consumption of:

- Split-system air conditioners..... 30W
- Split-system heat pumps..... 33W
- Single-package air conditioners..... 30W
- Single-package heat pumps 33W
- Small-duct, high-velocity systems..... 30W
- Space-constrained air conditioners..... 30W
- Space-constrained heat pumps..... 33W

D Duct sealing is a Mandatory Requirement in all climate zones, as confirmed through field verification and diagnostic testing. See Section 150.0(m)11.

E For Option B, where insulation directly below the roof deck is required, either R-13 insulation between rafters with an air space or R-18 insulation between the rafters with no air space is required.

F U-factors can be met by cavity insulation alone or with continuous insulation alone, or with both cavity and continuous insulation that results in a U-factor ≤ the U-factor shown. Any combination of cavity insulation and/or continuous insulation that results in a U-factor ≤ the Prescriptive requirement is allowed.

G Mass wall has a thermal heat capacity ≥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.

H The installed fenestration products shall meet the requirements of Section 150.1(c)3.

I The installed fenestration products shall meet the requirements of Section 150.1(c)4.

J When whole house fans (WHF) are required, only those listed in the Energy Commission Title 20 Appliance Efficiency Database 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.

K c.i. = continuous insulation
b.r.d. = below roof deck insulation

L NR = No Requirement

M If Prescriptive Roof Option A or B is used, R-8 duct insulation is required. For Prescriptive Option C, R-6 is required.

N For information about other HVAC equipment efficiency requirements, refer to Chapter 4 of the 2016 Residential Compliance Manual.

O V= rated storage volume of water heater in gallons

P Or equivalent uniform energy factor.

For more information

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

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