



			CZ 5	CZ 6	CZ 7	CZ 8	CZ 9	CZ 10	Comments	
<b>Insulation<sup>A</sup></b>	Roofs	Opt A No Air Space	No c.i. <sup>K</sup> R-30 ceiling Rad Barrier	No c.i. R-30 ceiling Rad Barrier	No c.i. 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	No c.i. R-30 ceiling Rad Barrier	No c.i. R-30 ceiling Rad Barrier	R-6 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		
		Opt B <sup>E</sup> No Air Space	No b.r.d. <sup>K</sup> R-30 ceiling Rad Barrier	No b.r.d. R-30 ceiling Rad Barrier	No b.r.d. 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 With Air Space	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-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-30 ceiling Rad Barrier Ducts in cond. space	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-30 ceiling Rad Barrier Ducts in cond. space		
	Walls	Above Grade	Framed <sup>F</sup>	U-0.051	U-0.065	U-0.065	U-0.051	U-0.051	U-0.051	
			Mass Wall Interior <sup>G</sup>	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	or higher
			Mass Wall Exterior <sup>G</sup>	U-0.125 R-8	U-0.125 R-8	U-0.125 R-8	U-0.125 R-8	U-0.125 R-8	U-0.125 R-8	or higher
		Below Grade	Below Grade Interior <sup>G</sup>	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	U-0.070 R-13	or higher
			Below Grade Exterior <sup>G</sup>	U-0.200 R-5	U-0.200 R-5	U-0.200 R-5	U-0.200 R-5	U-0.200 R-5	U-0.200 R-5	or higher
			Slab Perimeter	NR <sup>L</sup>	NR	NR	NR	NR	NR	
	Floors	Raised	U-0.037 R-19	U-0.037 R-19	U-0.037 R-19	U-0.037 R-19	U-0.037 R-19	U-0.037 R-19	or higher	
		Concrete Raised	U-0.269 R 0	U-0.269 R 0	U-0.269 R 0	U-0.269 R 0	U-0.269 R 0	U-0.269 R 0	or higher	
		Low-sloped	Aged Solar Reflectance Thermal Emittance	NR NR	NR NR	NR NR	NR NR	NR NR	NR NR	
	<b>Fenestration</b>	Steep-sloped	Aged Solar Reflectance Thermal Emittance	NR NR	NR NR	NR NR	NR NR	NR NR	0.20 0.75	or higher or higher
Maximum U factor <sup>H</sup>		0.32	0.32	0.32	0.32	0.32	0.32			
Maximum SHGC <sup>I</sup>		NR	0.25	0.25	0.25	0.25	0.25			
Maximum Total Area Maximum West Facing Area		20% NR	20% 5%	20% 5%	20% 5%	20% 5%	20% 5%			
<b>Space Heating<sup>B, C</sup></b>	Electric-Resistance Allowed	No	No	No	No	No	No			
	If gas, AFUE	MIN	MIN	MIN	MIN	MIN	MIN	Central furnace: ≥225,000 kBtuh 80% AFUE or higher <sup>N</sup>		
<b>Space Cooling</b>	If Heat Pump, Heating Seasonal Performance Factor (HSPF)	MIN	MIN	MIN	MIN	MIN	MIN	Single-phase air source • Split: <45 kBtuh 8.2 HSPF • Packaged: <65 kBtuh 8.0 HSPF or higher <sup>N</sup>		
	SEER	MIN	MIN	MIN	MIN	MIN	MIN	Central air conditioner or central air source heat pump		
	Refrigerant Charge Verification or Charge Indicator Display	NR	NR	NR	REQ	REQ	REQ	• 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 <sup>N</sup>		
<b>Central Sys. Air Handlers</b>	Whole House Fan <sup>J</sup>	NR	NR	NR	REQ	REQ	REQ			
	Central Fan Integrated Ventilation System Fan Efficacy	REQ	REQ	REQ	REQ	REQ	REQ			
<b>Ducts<sup>D</sup></b>	Duct Insulation	R-6	R-6	R-6	R-6 or R-8 <sup>M</sup>	R-6 or R-8 <sup>M</sup>	R-6 or R-8 <sup>M</sup>	or higher		
<b>Water Heating</b>	All Buildings	Gas Storage ≤55 gallons; ≤105 kBtuh Tankless Instantaneous ≤200 kBtuh Apr 16, 2015: 0.675-(0.0015*V) <sup>O</sup> EF 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  $\leq$  the U-factor shown. U-factor  $\leq$  the value in the table. Any combination of cavity insulation and/or continuous insulation that results in a U-factor  $\leq$  the Prescriptive requirement is allowed. See [Reference Appendix JA4](#) for construction assemblies that comply with Energy Standards requirements.
- G Mass wall has a thermal heat capacity greater than or equal to 7.0 Btuh-ft<sup>2</sup>. 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<sup>2</sup> of conditioned floor area per [Section 150.1\(c\)12](#)
- K c.i. = continuous insulation  
b.r.d = below roof deck
- 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

## For more information

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



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