

Nonresidential Re-Roofing

Permit Guide - 2016 Energy Code

Permit DATE: _____ Permit NUMBER: _____ CA Climate Zone: 2 3 4 12

Permit ADDRESS: _____ City, Zip: _____

COOL ROOF IS NOT REQUIRED If ANY of the boxes below are checked.

Cool Roof Exemptions: Check any that are true statements about project.

Do not count roof area over unconditioned space (e.g. warehouse) or process space (e.g. manufacturing)

- Area to be re-roofed does not exceed 2,000 ft² AND the area to be re-roofed is less than 50% of total roof area. (Use next line) *Check box if [A is less than 2000] AND [C is less than 50].*

A: Area to be re-roofed = _____ ft² B: Total roof area = _____ ft² C: (A/B) x 100 = _____%

- Project is in CZ 3 **AND** the roof is wood-framed with a U-factor ≤ 0.034
- The roof construction has a thermal mass (weight) of ≥ 25 lb/ft² over the roof membrane
- The building is a hotel, motel, or high-rise residential building, and the roof slope is ≤ 2:12

COOL ROOF IS REQUIRED If NONE of the boxes above are checked. Install roofing that meets the applicable requirements from the table(s) below.

Nonresidential Buildings*		
Low-sloped roof, pitch ≤ 2:12	Aged Solar Reflectance, minimum	0.63
	-AND- Thermal Emittance, minimum	0.75
	-OR- Solar Reflective Index**, minimum	75
Steep-sloped roof, pitch > 2:12	Aged Solar Reflectance, minimum	0.20
	-AND- Thermal Emittance, minimum	0.75
	-OR- Solar Reflective Index**, minimum	16
Hotel, Motel, and High-rise Residential Buildings		
Steep-sloped roof, pitch > 2:12, All roofing material weights	Aged Solar Reflectance, minimum	0.20
	-AND- Thermal Emittance, minimum	0.75
	-OR- Solar Reflective Index**, minimum	16

*Roof area covered by an installed solar PV panel is not required to meet these requirements
 **See Optional Form on reverse side.

OPTIONAL AGED SOLAR REFLECTANCE TRADE-OFF FOR NON-RES BUILDINGS W/ LOW-SLOPED ROOF

The 0.63 minimum Aged Solar Reflectance can be lowered by using a tradeoff between increased roof/ceiling insulation and reduced Aged Solar Reflectance values. **Locate** the maximum roof/ceiling U-factor below that applies to the aged solar reflectance of the roofing products to be installed. (Consult the U-factor tables **In Reference Appendices JA4**)

ROOF/CEILING INSULATION TRADEOFF FOR AGED SOLAR REFLECTANCE		
Aged Solar Reflectance of Installed Product	Roof/Ceiling Insulation - Maximum U-factor	
	Climate Zones 3 & 4	Climate Zones 2 & 12
0.62 - 0.60	0.075	0.052
0.59 - 0.55	0.066	0.048
0.54 - 0.50	0.060	0.044
0.49 - 0.45	0.055	0.041
0.44 - 0.40	0.051	0.039
0.39 - 0.35	0.047	0.037
0.34 - 0.30	0.044	0.035
0.29 - 0.25	0.042	0.034

Energy Standards Table 141.0-B

Nonresidential Re-Roofing

Permit Guide - 2016 Energy Code

ROOF INSULATION IS NOT REQUIRED If any of the boxes below are checked.

Exception to Roof Insulation Requirements: Check any that apply.

- Existing roof is already insulated to at least R-7 or has an assembly U-factor less than 0.089
- The roof deck or roof recover boards of a low-sloped roof are not exposed during reroof.

ROOF INSULATION IS REQUIRED if none of the boxes above are checked.

Install roof insulation that meets the applicable requirement in the table.

BayREN Climate Zone >		2	3 & 4	12
Nonresidential Buildings	Continuous insulation R-value or Roof Assembly U-Factor	R-14 0.055	R-8 0.082	R-14 0.055
High-rise Residential and Guest Rooms of Hotel/Motel Buildings	Continuous insulation R-value or Roof Assembly U-Factor	R-14 0.055		

Energy Standards Table 141.0-C

Note: If mechanical equipment is located on the roof and will not be disconnected and lifted as part of the roof replacement, insulation added may be limited to the maximum insulation thickness that will allow a height of 8" from the roof membrane surface to the top of the base flashing.

- Refer to Section 141.0(b)2Biii of the *2016 Building Energy Efficiency Standards*.

Building Inspector: When required, roofing material must have a **Cool Roof Rating Council (CRRC)** package label indicating compliance with the requirements in the tables above.

To apply Liquid Field Applied Coatings, the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements list in Section 110.8(i)4 of the *2016 Building Energy Efficiency Standards*.

Required Form:

- NRCC-ENV-01-E:** Certificate of Compliance - Envelope Component Approach (Sections A, E, & Declaration Statements)
<http://www.energy.ca.gov/2015publications/CEC-400-2015-033/appendices/forms/>

*Optional Form:

- NRCC-ENV-03-E:** Solar Reflectance Index Calculation Worksheet (if Solar Reflective Index is being used instead of Aged Solar Reflectance and Thermal Emittance values from table).

For more information:

- Visit <http://www.energy.ca.gov/title24/2016standards/>
- Contact the Energy Standards Hotline at (800) 772-3300 or email: title24@energy.state.ca.us
- Contact the BayREN Codes & Standards Program by email: codes@bayren.org