

DOCKETED

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Nonresidential Compliance Manual, Roof Alterations

Additional submitted attachment is included below.

January 6, 2022

California Energy Commission
Docket Unit, MS-4
Docket No. 21-BTSD-04
Sacramento, California 95814
Submitted Electronically

Re: California 2022 Multifamily and Nonresidential Compliance Manual, Docket No. 21-BSTD-04

Dear Energy Commission,

Thank you for the opportunity to comment on the draft 2022 Multifamily and Nonresidential Compliance Manual that was released for public review on November 24, 2021. Please consider the following suggestions. The first two are in line with new language in the 2022 building code, discontinuing the use of roof deck or insulation “exposure” as a trigger for when the energy code requirements apply for roof alterations. The third suggestion, related to calculating the average thermal resistance for tapered roof insulation, may improve code compliance when tapered roof systems are used.

1. On page 3-90 make the following modification:

Roof Insulation

When a roof is replaced or recovered, and the alteration complies with the prescriptive requirements for roofing products, the ~~altered exposed~~ roof area shall be insulated to the levels specified in Table 141.0-C of the Energy Standards (Table 3-22).

2. On page 3-91 make the following modifications:

For ~~roof alterations reroofing~~, when roofs are ~~replaced or recovered exposed to the roof deck~~ and meet the roofing products requirements in §141.0(b)2Bi or ii, the ~~altered exposed~~ area must be insulated to levels specified in the Energy Standards Table 141.0-C. For nonresidential buildings, this level is: ~~R-8 continuous insulation in Climate Zones 1 and 3 through 9 and R-14 continuous insulation in Climate Zones 2 and 10 through 16.~~

- ~~R-17 or R-23 (depending on climate zone) with the use of continuous insulation (ci) only; or~~
- ~~U-0.042 or U-0.037 (depending on climate zone) if the insulation is a combination of above-deck ci and cavity insulation. Under the U-factor option, at least R-10 of ci is required to be installed above deck.~~

3. On pages 3-92 or 3-93 add clarification:

Add clarification on how to calculate the “average thermal resistance” for tapered roof insulation. The term “thermal resistance” under section 141.0(b)2Bii (exception 3) refers to the R-value (U-factors are thermal transmittance). However, Appendix JA4 instructs the code user that this average should be based on the average U-factor and that the R-value for purposes of this section is determined by calculating the inverse of the average U-factor. According to the Appendix, R-values may not be averaged because it is reasoned that averaging the R-values instead of taking the inverse of the average U-factor will provide a different result. This creates confusion. See Appendix page JA4-7.

Contrary to the Appendix JA4, the ACE Resources Fact Sheet on Cool Roofs and Reroofing seems to suggest that averaging the R-value (instead of taking the inverse of the average U-factor) is the correct method for calculating the overall R-value that is added by the tapered insulation. Please note that the 2021 IECC has new language under sections C402.1.4.1.1 and C402.2.1.1 that permits the use of average R-values in calculating the contribution of the tapered insulation towards meeting the roof R-value or U-factor requirements. Consequently, in deciding whether or how to add clarification on this issue in the Compliance Manual, you might find the information in the 2021 IECC Code & Commentary regarding sections C402.1.4.1.1 and C402.2.1.1 helpful.

Sincerely,



Justin Koscher
President