

Transitioning to Healthy and Sustainable Buildings

Cost-Effective Energy Efficiency Requirements

COOL ROOFS

<u>Applies to:</u>	Roof alterations for existing non-residential buildings
<u>Description of Requirement:</u>	When alterations of low-sloped roofs exceed 50% of the roof area or 2,000 square feet of roof area, whichever is less, the roofing material shall meet enhanced solar reflectance criteria that exceed State Energy Code (Title 24, Part 6) requirements and amend State Green Building Code (Title 24, Part 11) requirements. Exceptions are included for roof area covered by specified solar photovoltaic and solar thermal panels and vegetated “green” roofs.
<u>Reason/Benefit:</u>	Cool roofs lower cooling loads, reduce peak demand, and extend roof life. The City’s General Plan and Climate Action Plan call for improved energy efficiency in existing buildings.
<u>Cost-Effectiveness:</u>	<p>According to the 2025 Nonresidential Alterations: Reach Code Study, meeting enhanced cool roof requirements when re-roofing low-sloped roofs is cost-effective in the City of San Diego¹ with reduced air conditioning demand leading to energy bill savings. The study concludes that the energy bill savings exceed the costs of the enhanced cool roof requirements through both the On-Bill and Long-term Systemwide Cost methods used by the California Energy Commission.</p> <p>Cost-effectiveness is measured using a benefit-to-cost ratio. “Benefit” is defined as the total value of energy savings over a 30-year lifetime and “cost” is defined as initial incremental cost, any additional maintenance costs, and replacement costs of complying with the amendment. A measure is cost-effective when the value of the benefits exceeds the costs over the lifecycle of the analysis (i.e., a ratio of at least 1.0).²</p>

¹ The City of San Diego is located in Climate Zones 7 and 10.

² The benefits and costs may be measured from either the billpayer’s or society’s perspective. The billpayer’s test simply examines cash flows to the owner/occupant. The societal test uses an estimate of the overall societal savings as the benefit (including factors like the value of emissions reductions and energy grid impacts), instead of just the energy bill savings. Source: Primer: The Local Government Reach Code Process (2024). Available at: https://localenergycodes.com/download/1895/file_path/fieldList/Reach%20Codes%20Primer.pdf

Adopted Code Language:

§1410.0506 Solar Reflectance for Cool Roof Coverings in Non-residential Buildings

- (a) Section 5.106.11 is modified with additions in the California Green Building Standards Code pursuant to Sections 1410.0105 and 1410.0105 of the San Diego Municipal Code in accordance with Section 1410.0506 (b), (c) and (d).
- (b) 5.106.11.1 Reserved.
- (c) 5.106.11.2. Cool Roof. Where more than 50 percent of the roof area, or more than 2,000 square feet of low sloped roofs are altered, whichever is less, the roof shall comply with the additional requirements of Section 5.106.11.2.1. Low sloped roof shall mean a roof having a slope less than 2:12.
 - (1) Exception 1: Roof construction that has a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 pounds per square foot.
 - (2) Exception 2: Roof area covered by building integrated solar photovoltaic and building integrated solar thermal panels.
- (d) Section 5.106.11.2.1 Solar Reflectance. For low-sloped (less than 2:12) roofs the roofing material shall have a minimum aged solar reflectance of 0.70 and a minimum thermal emittance of 0.75, or a minimum SRI of 75. Solar reflectance may be certified by other supervisory entities approved by the Energy Commission pursuant to Title 24, Part 1, California Administrative Code or by the Cool Roof Rating Council (CRRC).