

November 26, 2025

Eric Gonsalves
Yosemite 1380, LLC
755 E Yosemite Suite J
Merced, CA 95340

Merced Self Storage
1380 East Yosemite
Merced, CA 95340
JMA #23104.00

Dear Mr. Gonsalves,

Jackson Main Architecture has been requested to provide an analysis regarding the environmental impacts associated with the Heat Island Effect for the proposed project to be located at 1380 East Yosemite Avenue in Merced, CA. As defined by the 2022 California Green Building Standards Code Title 24, Part 11, Heat Island Effect refers to measurable elevated temperatures in developed areas as compared to more rural surroundings. Temperatures in developed areas are affected by absorption of heat by hardscapes and radiation of heat into surrounding areas resulting in local climate changes. Heat islands are influenced by geographic location and by local weather patterns, with effects changing on a daily or seasonal basis. The City of Merced has adopted Green Building Standards Code under Municipal Code Chapter 17.07.07, Ord. No. 2545, § 4, 12-5-2022, which directly refers to the California Green Building Code.

It is well understood the impact urban heat islands have on the environment. According to the United States Environmental Protection Agency, urban heat islands, particularly during the summer, have multiple impacts such as increased energy consumption, elevated emissions of air pollutants & greenhouse gases, impaired water quality, and compromised human health & comfort. Planning and design play a crucial role in reducing the impact of heat islands compared to less developed regions. Given the direct relationship between the built environment and heat islands, the California Green Building Code establishes guidelines on best practices for material selection on buildings to reduce heat island impacts of new developments. This includes a focus on roofing materials due to their extreme solar exposure and ability to absorb and radiate heat to the surrounding environment. The primary factors that measure a material ability to reduce heat gain are solar reflectance & thermal emittance. Solar reflectance is a measure of the fraction of solar energy that is reflected by a surface (measured on a scale of zero to one, with 1 being high and zero being low). Thermal emittance is the relative ability of a surface to radiate absorbed heat (measured on a scale of zero to one, with 1 being high and zero being low).

According to Section A5.106.11.2, Cool Roof for Reduction of Heat Island Effect, roofing materials are required to meet a minimum aged solar reflectance and thermal emittance to be considered compliant. The minimum requirements are defined based on roof slope and range

from 0.20 - 0.68 for solar reflectance and minimum thermal emittance of 0.75 for all climate zones.

The proposed storage development includes multiple buildings with varying roof slopes to create visual and enhance the built environment. Additionally, the project includes a combination of roofing materials such as single ply roofing membranes and standing seam metal roof to adequately manage stormwater runoff and enhance architectural interest. Collectively, all roofing materials on the project meet or exceed the aged solar reflectance and thermal emissivity requirements as defined in the 2022 California Green Building Standards Code Title 24, Part 11. Please reference the attached exhibit outlining the proposed roofing materials and compliance.

Sincerely,



Casey Kispert

Project Architect

