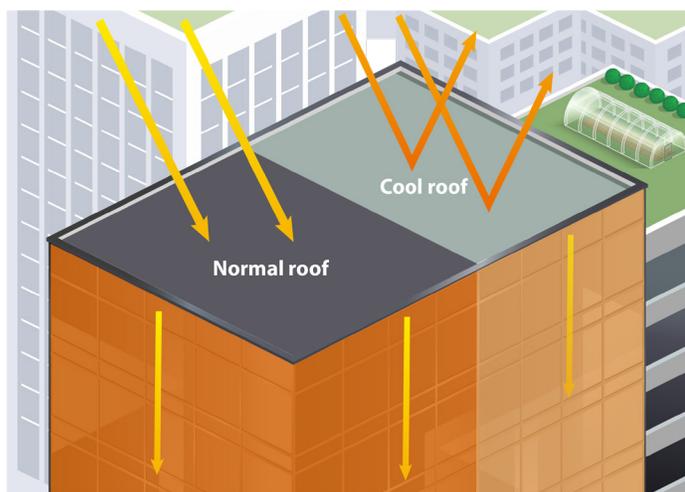


## Pollution Prevention (P2) Opportunities with Cool Roofs

Travelers may notice a gradual change in temperature when approaching a large city. This is more than just a feeling, “the annual mean air temperature of a city with one million people or more can be 1.8 - 5.4° F warmer than its surroundings.” This is called the “heat island effect” and is due to the absorption of heat from roof and pavement surfaces.<sup>1</sup> The hospitality sector holds a key role in combating this inherent increase of temperature within large urban environments. Installing cool roofs on hotels within cities will help to diminish this heat island effect by reflecting solar radiation and, in turn, minimizing the amount of heat the rooftops absorb. This heat will no longer spread to the building below, saving money on your air conditioning costs. The installation of a cool roof can also be seen as mitigating environmental risks related to smog, public health, and urban heat island effect.<sup>2</sup>

### Energy Savings for Air Conditioning

A cool roof can lower the surface temperature of your roof by up to 50-60° F through enhancing the reflective properties of the roofing material. In contrast, a standard dark roof is capable of reaching 150°F.<sup>3</sup> By lowering the surface temperature of the roof, less heat is able to transfer to the building, resulting in a reduction of energy usage by the air conditioner. When choosing and purchasing a cool roof, look for “ENERGY STAR certified roof products [that] can help reduce the amount of air conditioning needed in buildings, and can reduce peak cooling demand by 10-15%.”<sup>4</sup> For hotels located in a cooler climate, installing a cool roof may rule out buying air conditioning altogether.<sup>5</sup>



### Cost of Cool Roof Material

If you are ready to replace your roof, the price of upgrading and investing in cool roof technology may not necessarily be costlier. In fact, depending on location and circumstances, “cool roof coatings on a low-slope roof might cost \$0.75 - \$1.50 per square foot.”<sup>3</sup> It is important to note that there are cost and energy savings that go beyond the electrical bill that can be gained through rebates, incentives, and life span durability.<sup>6</sup> Every property is different and faces a variety of challenges, such as slope of the roof and projected financial burdens. To better estimate your specific incentives and metrics of purchasing a cool roof, use the [roof savings calculator](#) compiled by a half dozen trusted sources, including EPA and The U.S. Department of Energy.<sup>7</sup>

### Cool Down AZ

In Arizona, nighttime is often the only reprieve from the unrelenting heat outside. However, heat island effects become more prominent at night, extending to as much as a 22°F difference when compared to rural surroundings.<sup>5</sup> Large cities like Phoenix and Tucson are impacted year-round by this effect. Cool roofs mitigate some of this increased heat and contribute to providing guests with a comfortable environment in and outside their guest room. Today, more than ever, guests are seeking out establishments that value the future of our environment and are taking the steps to improve their community. By installing a cool roof your hotel will show an investment into the future for the environment, appealing to these guests and saving you cooling costs now.

### Types of Cool Roof Systems and Alternatives

The goal of a cool roof is to reduce the heat absorbed by the roof with specialized paint, sheet coverings, tiles, or shingles. Many cool roofs utilize reflectivity, which increases the albedo (amount of solar radiation reflected) of surfaces on Earth and allows solar waves to reflect back out of the atmosphere. The classic cool roof coating is often seen as a white layer of roofing material, but there are a variety of colors and options available. Products today are made to fit a majority of roof types. If your building has a low sloped roof with single-ply membrane, modified bitumen sheet membranes, built-up roof, or spray polyurethane foam then they can be retrofitted to be a cool roof with various type of coatings and surface treatments. There are also asphalt tiles with specially coated granules and painted metal roofs for steep sloped roofs.<sup>6</sup> Hotel buildings with flattened roofs have a comparable alternative option to cool roofs. A green roof, or living roof, is composed of plants and greenery that utilize their natural affinity to absorb heat and solar radiation in order to effectively

cool the area. Other benefits of a green roof include the reduction of storm water run off, increased building insulation for sound, and filtering of toxins/pollutants related towards respiratory diseases.<sup>8</sup>

Learn more about green roofs, cool roofs and how to save money with your air conditioning in the "Opportunities with HVAC" resource summary from ADEQ.<sup>9</sup>

## References

<sup>1</sup> EPA: Heat Island Effect

<sup>2</sup> Cool Roof Rating Council: Why Cool Roofs Are Way Cool

<sup>3</sup> EPA: Using Cool Roof to reduce Heat Islands

<sup>4</sup> Energy Star: Roof Products

<sup>5</sup> Energy Buildings Journal: Effect on cool roof on commercial buildings energy use in cold climates

<sup>6</sup> Energy.gov : Cool Roofs

<sup>7</sup> ORNL: Roof Saving Calculator

<sup>8</sup> National Park Service Department: Green Roof Benefits

<sup>9</sup> Arizona Department of Environmental Quality. P2 Resource Summaries.