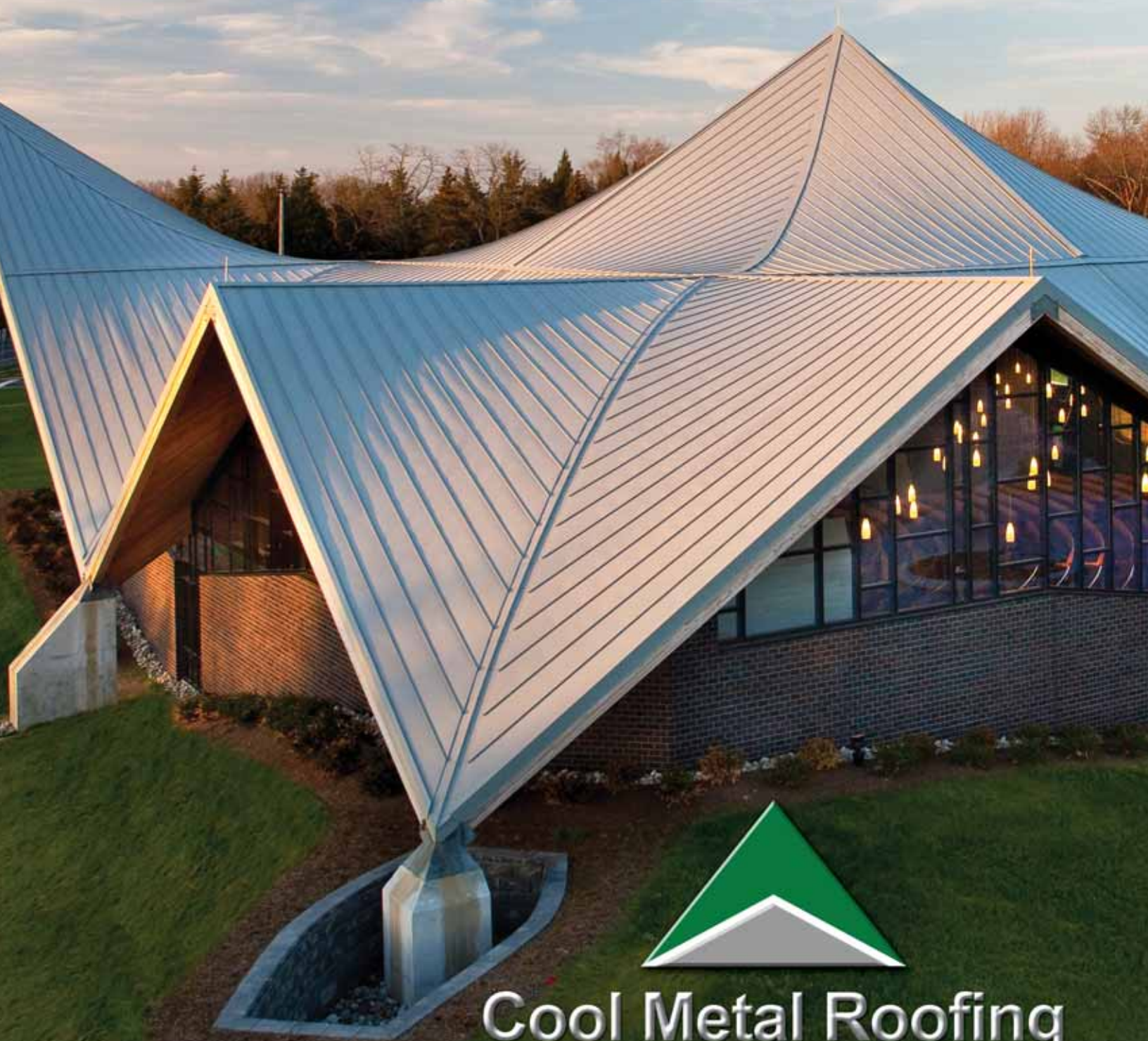


Metal **ROOFING**

Cool and Sustainable



Cool Metal Roofing

www.CoolMetalRoofing.org

Builders and architects are changing the way they select building materials and design for energy performance. The roof can have the greatest impact on the energy use of a building. Coatings and finishes available today qualify metal as a recognized cool roof product.

Buildings in the US consume over one-third of all energy and three-quarters of all electricity generated. Lightly colored, more reflective cool roofs can help reduce energy consumption by significantly lowering building cooling loads. Highly emissive roofs can also result in lower urban air temperatures, thereby benefiting the environment by reducing smog formation. Metal roofing can combine both high solar reflectance and high solar emittance that often defines cool roofing.

Metal roofing has many attractive features. Its architectural appeal, variety of profiles, textures and colors, flexibility, and durability make it popular for residential and commercial projects, both in low-slope and steep-slope applications. Metal roofing and its finishes are inert, safe materials that do not pose a health risk. Its non-combustibility can reduce the spread of fire in and among buildings.



Energy Efficiency

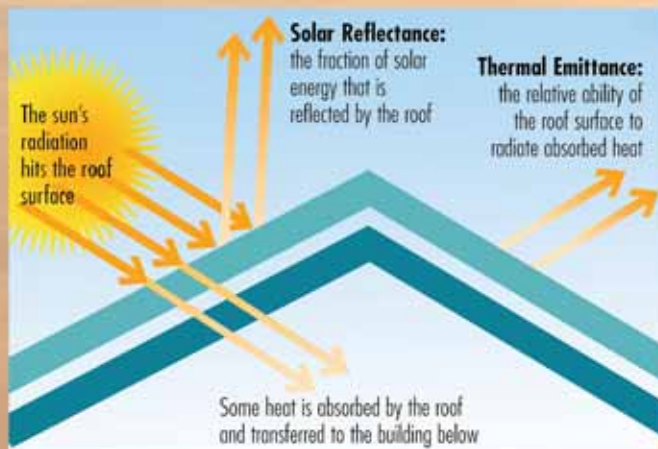


Photo courtesy of the CRRC

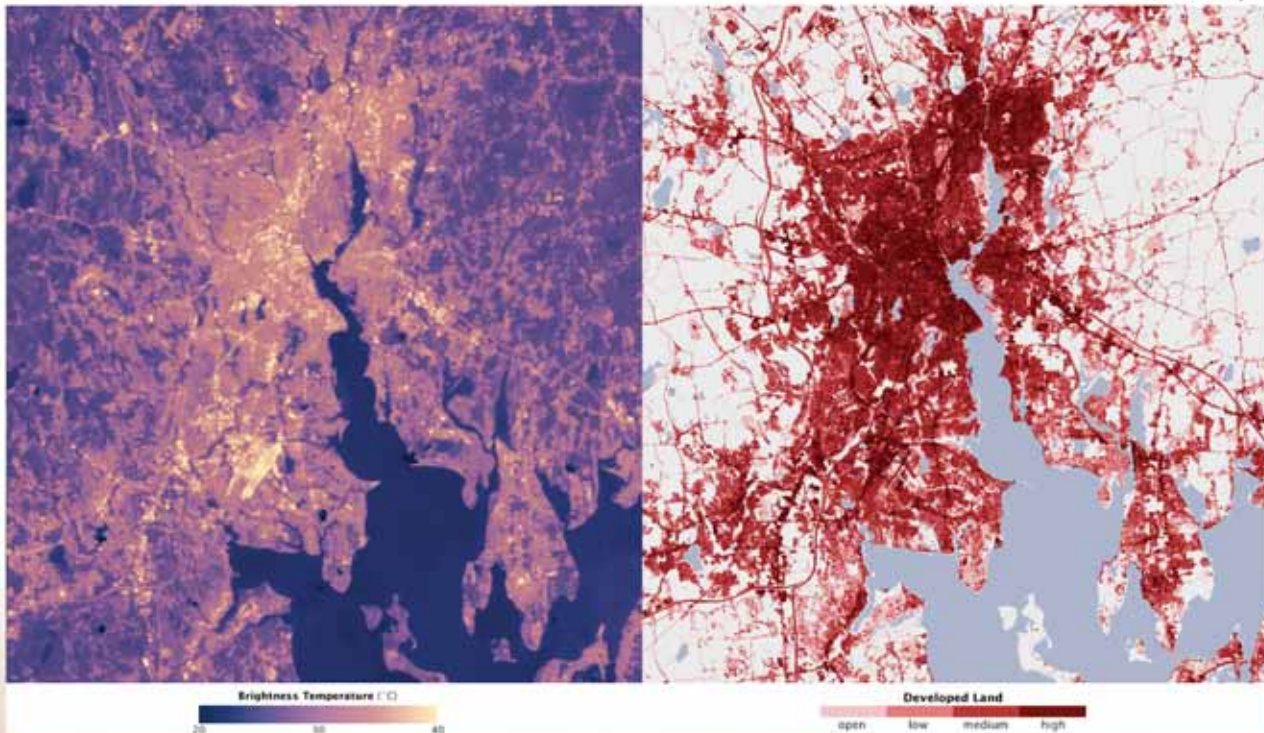
The infrared emittance of a roof is a measure of absorbed solar radiation that is re-emitted from the roof surface to the sky. Emittance of metal roofing varies with the surface finish. Emittance of painted or granular-coated metal roofing can be as high as 88 percent.

Where annual cooling loads dominate, a highly reflective and highly emissive painted or granular-coated metal roof is optimal for reducing energy consumption. Where annual heating loads dominate, an unpainted metal roof is more desirable because of its low infrared emittance.

Metal roofing is the choice for a cool roof. For more information about its energy efficiency visit www.coolmetalroofing.org

Mitigating the Urban Heat Island Effect

Baltimore, Maryland



About half of the North American population lives in urban areas. The prevalent use of energy-absorbing, dark building materials and dark pavements, coupled with a lack of vegetation, created a micro-climate where ambient temperatures are higher than in the surrounding areas. For some cities, this urban heat island effect can increase the local temperature as much as 12° F (7° C).

Cool metal roofing is one way to mitigate the urban heat island effect. Roofs with higher reflectance have lower surface temperatures, which help reduce ambient air temperatures. This improves air quality since less smog is formed. Also, air pollution associated with burning fossil fuels at utility plants is reduced because of less peak load demand.

Oak Ridge National Laboratory research has shown that metal roofing retains solar reflectance over time better than other roofing products because it resists the growth of organic matter and sheds dirt more readily than other materials.

Cool Metal roofs are listed and/or included in the following programs:

- ▶ U.S. EPA's Energy Star Roof Products Program
- ▶ Cool Roof Rating Council directory
- ▶ California Energy Commission's building energy efficiency standards and other national codes.

The Florida Solar Energy Center found that metal roofing *"...saves the most energy as a result of its high reflectance and ability to cool quickly at night."*

Metal roofing was reported to save a Florida homeowner approximately 23% annually in cooling costs, compared to a dark gray asphalt shingle roof.*

*Comparative Evaluation of the Impact of Roofing Systems on Residential Cooling Energy Demand." Contract Report FSEC-CR-1220-00, Florida Solar Energy Center.

Cool Metal Roofing



Sustainability

In addition to being energy efficient, metal roofing is recognized as a sustainable building material for several other environmental reasons. And, as a "green" building product, metal roofing is rightfully becoming more popular in the architectural community.

DURABILITY - Metal roofing is known for its resistance to weather, including wind, hail, ice, and snow. It is less affected by hot-cold and wet-dry cycles that destroy other materials. Metal roofs have been in service for centuries. Painted roofs are credibly warranted up to 40 years against specific levels of chalk and fade.



RECYCLED CONTENT - Metal roofs typically have a minimum of 25% recycled content. This level of recycled content allows metal roofing to be routinely included on listings for "green" and recycled content products. This is especially important since the U.S. Green Building Council (USGBC) program for certification of green buildings, Leadership in Energy and Environmental Design (LEED®) awards points for the weighted total recycled content of all materials in a project. Metal roofing is a solid contributor toward points for a registered LEED® building.

RECYCLABILITY - Metal roofing is also 100% recyclable when ultimately removed as part of building renovation or demolition. Other roofing materials are



routinely removed and disposed of by the ton in landfill, but metal roofing can be recycled in its entirety. Metals are exceptional building materials that can credibly claim both recycled content and total recyclability by recognized definitions.

LOW WEIGHT - Depending on the specific product chosen, the weight of metal roofing is one-third to as little as one-eighth that of conventional roofing shingles. This lower weight produces less static and dynamic loading on the structure and thus can allow for metal roofing to be installed over old roofing material without requiring demolition removal.

