

Material Points in LEED

This document describes how Custom-Bilt Metals cool metal roofing products can directly contribute toward points in the USGBC's 2009 LEED® Green Building Rating System (Version 3). For each credit category and eligible point(s) shown below, the language from the *2009 LEED New Construction and Major Renovations Reference Guide* is provided as substantiation.

Sustainable Sites

SS Credit 7.2: Heat Island Effect - Roof (1 pt)

Heat islands are defined by LEED as thermal gradient differences between developed and undeveloped areas. In large urban areas, the Heat Island Effect contributes to poor environmental air quality issues, such as smog, that are a health hazard to the general population.

To address the environmental issues the Heat Island Effect has in developed areas, roofing with solar reflectance reduces the surface temperature of a roof, when compared to a roof without solar reflectance. As a result, less heat is emitted from the roof.

A Custom-Bilt Metals cool metal roof has solar reflectance and thermal emittance values that can meet the Solar Reflective Index criteria for this credit.

"Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than the values listed below for a minimum of 75% of the roof surface."

Roof Type	Slope	SRI Value
<i>Low-Sloped Roof</i>	<i>≤ 2:12 pitch</i>	<i>SRI 78</i>
<i>Steep-Sloped Roof</i>	<i>> 2:12 pitch</i>	<i>SRI 29</i>

A roof that meets these criteria directly contributes one point in LEED-NC. Note too that for a roof that covers more than 75% of the roof surface, the SRI criteria can be lowered using a weighted average calculation approved by USGBC.

Materials & Resources

MR Credit 4: Recycled Content (1-2 pt)

The metal manufacturing process involves the extraction and processing of virgin materials. These natural resources are not renewable and overtime place a heavy toll on the environment.

Custom-Bilt Metals' roofing contains recycled metal content, is 100% recyclable at the end of their useful life, and is very durable material. The properties of Custom-Bilt Metals cool metal roofing products can contribute to this credit with the LEED defined default of 25% post-consumer recycled content.

“Use materials with recycled content¹ such that the sum of postconsumer² recycled content plus 1/2 of the preconsumer³ content constitutes at least 10% or 20%, based on cost, of the total value of the materials in the project. The minimum percentage materials recycled for each point threshold is as follows:”

Recycled Content	Points
10%	1
20%	2

“The recycled content value of a material assembly is determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

¹ *Recycled content is defined in accordance with the International Organization of Standards document, ISO 14021 — Environmental labels and declarations — Self-declared environmental claims (Type II environmental labeling).*

² *Postconsumer material is defined as waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose.*

³ *Preconsumer material is defined as material diverted from the waste stream during the manufacturing process. Reutilization of materials (i.e., rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it) is excluded.”*

Energy and Atmosphere

EA Credit 1: Optimize Energy Performance (1-19 pt)

Buildings that lack optimized energy performance contribute to excessive energy use. The resulting economic and environmental impacts can be reduced beyond meeting the LEED prerequisites for the Energy and Atmosphere credit.

Custom Bilt Metal's cool metal roof products have superior thermal performance, help to reduce cooling/heating energy use, can contribute toward improving the overall energy performance of a building's design and can meet new and/or existing cost savings percentages for this credit (EA Credit 1).

“OPTION 1. Whole Building Energy Simulation

Demonstrate a percentage improvement in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance according to Appendix G of ANSI/ASHRAE/IESNA Standard 90.1-2007 (with errata but without addenda 1) using a computer simulation model for the whole building project. The minimum energy cost savings percentage for each point threshold is as follows:”

New Buildings	Existing Building Renovations	Points
12%	8%	1
14%	10%	2
16%	12%	3
18%	14%	4
20%	16%	5
22%	18%	6
24%	20%	7
26%	22%	8
28%	24%	9
30%	26%	10
32%	28%	11
34%	30%	12
36%	32%	13
38%	34%	14
40%	36%	15

42%	38%	16
44%	40%	17
46%	42%	18
48%	44%	19

EA Credit 2: On-Site Renewable Energy (1-7 pt)

A high percentage of all electricity in the United States is generated with fossil fuels, which are associated with CO₂ and other pollution emissions. By generating on-site renewable energy, emissions can be reduced and mitigate the impact on the environment.

FusionSolar™ from Custom-Bilt Metals is a metal-roof-integrated photovoltaic solar electricity generation system, and it can help contribute to meet minimum requirements for energy cost savings for this credit. FusionSolar can produce 0.2 watts per square foot of thin film photovoltaic material installed.

“Use on-site renewable energy systems to offset building energy costs. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building’s annual energy cost and use the table below to determine the number of points achieved. Use the building annual energy cost calculated in EA Credit 1: Optimize Energy Performance or the U.S. Department of Energy’s Commercial Buildings Energy Consumption Survey database to determine the estimated electricity use. The minimum renewable energy percentage for each point threshold is as follows:”

Percentage Renewable Energy	Points
1%	1
3%	2
5%	3
7%	4
9%	5
11%	6
13%	7