

LEED® Rating System Fact Sheet: Opportunities for Awnings and Solar Shades

Introduction

Awnings and solar shades offer a number of benefits to buildings and their occupants. Many projects today use one of the U.S. Green Building Council's LEED rating systems to certify their environmental features and performance, so the question often arises about how awnings and solar shades can contribute. This fact sheet provides an overview of that topic. For more information, see "How Awnings and Solar Shades Can Contribute to LEED Certification," July 2, 2013 report.

Exterior solar shades

Exterior shades are mounted above a window or storefront and extend or retract in a plane parallel to the window to protect the window and interior. For operation, the screens can be operated with a gear and hand crank, a motor with a toggle switch, a motor with a remote control, or a motor controlled by an automation system.

Stationary commercial canopies

Stationary canopies are fabric structures that provide shelter and shade. They can be attached to the building at one end and supported by posts at the other, or they can be constructed independently of a building.

The Products

This fact sheet applies to four standard products typically supplied to a building project by PAMA members:

Stationary awnings

Window awnings are used to shelter windows from sun and heat, control light and glare, for privacy, and for aesthetics. Stationary awnings are fixed in place and provide shade over windows or other openings.

Drop-arm (adjustable) window awnings

Drop-arm window awnings are supported by articulating supports that allow the fabric shade to extend, retract, and change angle. The shade can provide total privacy and sun-protection, like an exterior blind, or it can extend horizontally to provide partial or full shade while allowing daylight and views to the outside. Drop-arm awnings are typically operated either with a gear-and-crank mechanism or with an electric motor, which may be automatically controlled.



LEED Rating System Basics

LEED is a family of rating systems for the built environment that recognizes projects for achievements in energy efficiency, water conservation, habitat protection, indoor environmental quality, and resource efficiency. LEED is owned and managed by the U.S. Green Building Council (USGBC). Buildings become "LEED certified" by completing the registration and documentation requirements and receiving official certification from the Green Building Certification Institute (GBCI). They can be certified at one of four levels:

- Certified
- Silver
- Gold
- Platinum

This report is based on LEED 2009, which is the dominant version of LEED in 2013, and likely to remain so over the next few years. The newer LEED version 4 will be released late in 2013 and adopted gradually over time. It includes substantive changes to many credits, especially in the Materials & Resources category, that will provide new opportunities for awnings and solar shades.

LEED Chronology

LEED version	Year Introduced	Widely Used Until
LEED Pilot	1998	Never
LEED v2.0	2000	2005
LEED v2.1	2002	2007
LEED v2.2	2005	2013
LEED 2009 (a.k.a. LEED v3)	2009	2018 (estimate)
LEED v4 (a.k.a. LEED 2012)	2013–2015	2020 (estimate)



LEED 2009 Rating Systems

LEED 2009 includes the following rating systems. All of these except LEED for Neighborhood Development were included in this assessment.

- **Building Design & Construction (BD&C) rating systems**
 - LEED for New Construction and Major Renovations (LEED-NC)
 - LEED for Schools
 - LEED for Core & Shell (LEED-CS)
 - LEED for Retail – New Construction
 - LEED for Healthcare
- **Interiors Design & Construction (ID&C) rating systems**
 - LEED for Commercial Interiors (LEED-CI)
 - LEED for Retail – Commercial Interiors
- **Operations & Maintenance (O&M) rating system**
 - LEED for Existing Buildings Operations & Maintenance (LEED-EBOM)
- **Homes rating system**
 - LEED for Homes
- **Neighborhood Development rating system**
 - LEED for Neighborhood Development (LEED-ND)

Building manufacturers sometimes want to get their products, assemblies, or building systems "LEED certified." Products cannot be LEED certified or otherwise preapproved for LEED. They can only contribute to the earning of specific LEED credits and therefore to the certification of a project.

Product Contribution to Credits

Across the nine rating systems assessed for this report, fabric structures can contribute directly to helping a project achieve 11 LEED credits, and may play a supporting role in the achievement of 11 additional credits. (Note that some of those credits apply to just one rating system, while others occur in several of them.) Shade products are only one element, however, of an overall building-wide effort to save energy or otherwise improve environmental performance, so it's important not to suggest or imply that a project can earn LEED credits based on these products alone.

Number of Credits to Which Each Product Type Can Contribute

PRODUCT	Number of Credits with Direct Contribution Potential	Number of Credits with Supporting Contribution Potential
Stationary awnings	7	4
Drop-arm window awnings	9	5
Exterior solar shades	9	4
Stationary commercial canopies	8	7

Key Credits to Consider

Minimum Energy Performance / Optimize Energy Performance

The LEED rating systems include a minimum energy performance requirement as a prerequisite, and points for achieving energy efficiency beyond that level as a credit. Both the prerequisite and the credit use the same calculation methods in most of the rating systems. All LEED rating systems (except for those focused exclusively on interiors) include ways in which the energy benefits of fabric structures can be recognized.

Building Design and Construction Rating Systems

The Building Design and Construction rating systems, including NC, CS, Schools, NC-Retail, and Healthcare, all use computer simulations comparing the energy cost for a code-compliant "baseline" building with the proposed building. The rules for how that comparison has to be done are in Appendix G of ANSI/ASHRAE/IES Standard 90.1-2007, or "ASHRAE 90.1-2007" for short.

ASHRAE 90.1-2007 specifically allows users to take advantage of the benefits of exterior shading devices by stipulating that the baseline building should not have any, while the proposed building can include them, as long as they are

either fixed or automatically controlled. Manually deployed devices, even if motorized, do not qualify, although automatically controlled shades may have manual overrides.

LEED for Homes

LEED for Homes does not explicitly credit the use of shading devices, but it allocates points based on the HERS Index, which, like the non-residential rating systems, allows projects to take advantage of shading. Unlike ASHRAE 90.1, the HERS method is based on units of energy, not energy cost.

LEED for Existing Buildings

The energy prerequisite and credit in LEED for Existing Buildings are based on their actual measured energy use. Because this method is based on actual energy use, awnings, shades, and fixed pavilions can all contribute if they are deployed in a way that actually saves energy. Exterior shading devices will have the most benefit in situations with older glass that has not been upgraded. Unlike old glass, most new glazing has special coatings that provide some shading, making exterior shading devices less critical.

Recycled Content

All the LEED 2009 rating systems except LEED for Homes reward projects for the use of recycled content in shading products. LEED-EBOM and LEED for Healthcare each include recycled content as a contributing factor within a more integrated green materials credit.

Both post-consumer and preconsumer recycled content are included, but preconsumer content is assigned half the value of post-consumer content. Recycled content is almost always an ingredient in metal structural components, and may be available in fabric coverings as well. LEED allows a default combined post-consumer and pre-consumer recycled content value of 25% for steel. Suppliers simply have to document what portion of the mass of the product is made of steel.

Note: "recyclable" is not the same as "made with recycled content." There is no mechanism in current LEED rating systems to reward the use of materials that are recyclable in the future.



LEED Credits to which Awnings and Solar Shades Can Contribute Directly

CREDIT	Relevant Rating Systems	Relevant Products	Limitations and Constraints
Alternative Transportation—Bicycle storage and changing rooms	New Construction, Core & Shell, Healthcare	Stationary commercial canopies	Only applies to multiunit residential products in nonresidential rating systems: dorms, apartment buildings, barracks.
Heat Island Effect—Nonroof	New Construction, Core & Shell, Healthcare, Schools, Retail-New Construction	Stationary commercial canopies	Fabric covering has to be light colored and/or reflective ($SRI \geq 29$).
Light Pollution Reduction	New Construction, Core & Shell, Healthcare, Schools, Retail-New Construction	Drop-arm awnings, Exterior solar shades	Shades have to be automatically controlled (not just motorized) and scheduled for nighttime deployment.
Site Selection	Commercial Interiors, Retail-Commercial Interiors	Drop-arm awnings, Exterior solar shades, Stationary commercial canopies	Awnings and shades apply to Light Pollution Reduction; Stationary canopies to Heat Island Effect.
Minimum Energy Performance/Optimize Energy Performance	New Construction, Core & Shell, Schools, Healthcare, Retail-New Construction, Retail-Commercial Interiors, Existing Buildings, Homes	Stationary awnings, Drop-arm awnings, Exterior solar shades, Stationary commercial canopies	Existing Buildings (EBOM): any energy use reduction can contribute to earning points. Homes: predicted energy savings attributable to shading a façade can contribute. Other LEED rating systems: only energy savings from automated or fixed shading devices can contribute, based on predicted energy cost reductions.
Recycled Content	New Construction, Core & Shell, Commercial Interiors, Retail-Commercial Interiors, Schools, Retail-New Construction	Stationary awnings, Drop-arm awnings, Exterior solar shades, Stationary commercial canopies	Post-consumer recycled content is valued more highly than preconsumer; recyclable materials do not contribute.
Regional Materials	Commercial Interiors, Retail-Commercial Interiors	Stationary awnings, Drop-arm awnings, Exterior solar shades, Stationary commercial canopies	First of two points is based on manufacturing location only, not point of raw material extraction, so local fabrication can contribute.
Sustainable Purchasing—Facility alterations and additions	Existing Buildings	Stationary awnings, Drop-arm awnings, Exterior solar shades, Stationary commercial canopies	The product must contain at least 10% post-consumer recycled content or 20% preconsumer (or a combination of the two) to contribute.
Sustainably Sourced Materials and Products	Healthcare	Stationary awnings, Drop-arm awnings, Exterior solar shades, Stationary commercial canopies	Recycled content is one of several green attributes of products that can qualify them to contribute.
Daylight and Views—Daylight	New Construction, Core & Shell, Commercial Interiors, Healthcare, Retail-Commercial Interiors, Schools, Retail-New Construction	Stationary awnings, Drop-arm awnings, Exterior solar shades,	Installations that prevent glare problems indoors while allowing sufficient daylight qualify for the point.
Daylight and Views (combined)	Existing Buildings	Stationary awnings, Drop-arm awnings, Exterior solar shades,	Installations that prevent glare problems indoors while allowing sufficient daylight qualify for the point.