

Saving lives through affordable shading: shielding communities from excessive solar heat

DIY Shading for Emergency Use

Resilience during heatwaves

Mylar emergency blanket deployed as DIY window solar control.



A handout with easy-to-follow guidance is now available. [Scan the QR code below for the PDF!](#)

DIY Affordable Window Shading

Overview

This document shows how you can safely and affordably shade your windows to keep your home cool during hot summer days. This document is for informational purposes only. It does not constitute a recommendation or warranty. The information is provided as a guide only. The user assumes all responsibility for the use of the information. The user should consult a professional for more information.

Recommendations

Exterior-Mounted Solutions

Shade with Shade Lin

What to look for: Shade Lin is a clear, flexible, and durable material that can be installed on the exterior of your window. It is made of a high-quality plastic material that is resistant to UV rays and weathering. It is available in various colors and patterns to match your home's exterior.

Where to purchase: Major home improvement stores, online retailers.

Installation materials: Adhesive tape, double-sided tape.

Price: \$10-\$15.

Typical usage: Long-term.

Recommendations

Interior-Mounted Solutions

Mylar Emergency Blanket

What to look for: Mylar emergency blankets are lightweight, reflective, and durable. They are made of a thin layer of aluminum that reflects heat away from your home. They are available in various sizes and colors.

Where to purchase: Major online retailers, major home improvement stores, outdoor stores.

Installation materials: Adhesive tape, double-sided tape.

Price: \$10-\$15.

Typical usage: Short-term.

Reflective Bubble Wrap

What to look for: Reflective bubble wrap is a lightweight, reflective material that can be installed on the interior of your window. It is made of a thin layer of aluminum that reflects heat away from your home. It is available in various sizes and colors.

Where to purchase: Major online retailers, major home improvement stores, outdoor stores.

Installation materials: Adhesive tape, double-sided tape.

Price: \$10-\$15.

Typical usage: Short-term.

Aluminum Foil

What to look for: Aluminum foil is a lightweight, reflective material that can be installed on the interior of your window. It is made of a thin layer of aluminum that reflects heat away from your home. It is available in various sizes and colors.

Where to purchase: Grocery stores, outdoor stores.

Installation materials: Adhesive tape, double-sided tape.

Price: \$10-\$15.

Typical usage: Short-term.

Things to Watch Out For

If you are installing anything on the interior side of your window, please be careful that:

- It is light-colored or mirror-like.
- It doesn't create an air-tight pocket between the glass and the cover.

Blackout Curtains with Suction Cups

What to look for: Blackout curtains with suction cups are a lightweight, reflective material that can be installed on the interior of your window. They are made of a thin layer of aluminum that reflects heat away from your home. They are available in various sizes and colors.

Where to purchase: Major online retailers, major home improvement stores.

Installation materials: Suction cups.

Price: \$10-\$15.

Typical usage: Short-term.

Questions?

Get in touch at windows@lbl.gov

Scan the QR code for the most current version of this handout.

BERKELEY LAB

Contact Info

Luís Fernandes
Lawrence Berkeley National Laboratory
Research Scientist



Email: lf Fernandes@lbl.gov
Website: windows.lbl.gov

Attachments Energy Rating Council

The AERC label for residential shading products represents the complexity of their energy performance in a rating that is easy for consumers to understand.



ENERGY IMPROVEMENT

AERCenergyRating.org

Energy Rated. Added Comfort.

Manufacturer Name

Product 1

Model # XXX-XXXX

AERC#: XX-X-XXXXXX

AERC HOME ENERGY IMPROVEMENT RATINGS
Higher number indicates greater home energy savings

Cool Climate Rating
For This Product



To reduce heating costs, select products with a higher cool climate rating.

10

Typical Use
Max rating 25

50

With Automation
Max rating 65

Warm Climate Rating
For This Product



To reduce cooling costs, select products with a higher warm climate rating.

45

Typical Use
Max rating 50

65

With Automation
Max rating 100

■ ■ In a mixed climate, consider both warm and cool climate ratings.

Automation of this product may lead to improvement in energy performance

Commercial building rating

A rating for commercial building shading systems is now under development.

AERC **SAMPLE**

AERC ENERGY PERFORMANCE CERTIFICATE
COMMERCIAL SECONDARY WINDOW

MANUFACTURER ABC

PRODUCT INFORMATION		GLAZING INFORMATION	
SERIES	1000	GLAZING TYPE	TYPE 1
PRODUCT	XY21	GLASS COMPANY	XXXX CLEAR (CDE 9999)
INSTALLATION POSITION	Interior		
AERC NUMBER	WFL-ABCDE		
DESCRIPTION	This product is an interior secondary window with clear glass.		
MANUFACTURER URL	https://ManufacturerName.com		

PRODUCT RATINGS INSTALLED OVER BASE WINDOW

RATING	PRIMARY BASELINE WINDOW	WITH SECONDARY WINDOW ADDITION
U-FACTOR (Btu/h·ft²·°F)	1.12	0.63
SOLAR HEAT GAIN COEFFICIENT (SHGC)	0.72	0.56
VISIBLE TRANSMITTANCE (VT)	0.77	0.61
AIR LEAKAGE (AL) (cfm/ft²)	2.0	1.15

For more information, visit AERCenergyRating.org/Commercial

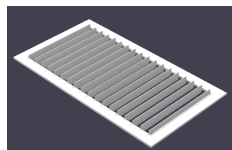
This certificate indicates that the product has been rated according to strict standards set forth by the Attachments Energy Rating Council (AERC).

DISCLAIMER: THE ATTACHMENTS ENERGY RATING COUNCIL RATINGS ARE BASED ON CERTAIN ASSUMED CRITERIA INCLUDING ATTACHMENT INSTALLATION OVER A SINGLE FRAME CLEAR GLASS ALUMINUM FRAME EXISTING WINDOW. AERC DOES NOT REPRESENT OR GUARANTEE IN ANY MANNER THAT THE CONSUMER WILL EXPERIENCE ENERGY SAVINGS. SEE WEBSITE FOR ADDITIONAL RATING CRITERIA DETAILS.

*Simulated over a single-pane clear glass aluminum frame existing window (AERC baseline window C5).
**Based on AERC 12 physical test method.

LBL Research

The AERC labeling system depends on sophisticated modeling, simulation, and testing performed at LBNL for a variety of shading geometries and material properties.



Louver shutter optical model.



Roman shade in infrared testing chamber.



Looped roman shade with complex cavity configuration.

PNNL Research

Blinds:
SAVINGS
\$220-\$360

Cellular Shades:
SAVINGS
\$280-\$770

PNNL Lab Home Studies Show Year-Round Savings:

- Heating: 20 to 500 therms/year
- Cooling: 700 to 5,200 kWh/year

Field Demonstrated Energy Savings: 3%-30%

Lower Cost Measure:
\$100 median price per window

High Market Potential:

- 150 million + attachments shipped annually
- 4-16 year lifetimes

Low-E Storm Windows Benefits



- Cost**
- 1/3 of replacement window
 - Payback 4-14 years
 - Easy installation - 80% DIY
- Energy Savings**
- Cuts HVAC load 10-33% in homes with single-pane or double-pane clear-glass windows
 - Reduces air leakage
- Benefits**
- Operable, good looking
 - Stays on for year-round comfort
 - Preserves historic windows

Window attachments like cellular shades and storm windows with low-emissivity coatings can provide energy savings in the winter and the summer.

Contact Info

Charlie Curcija
Lawrence Berkeley National Laboratory
Technology Researcher IV



Email: ccurcija@lbl.gov
Website: windows.lbl.gov

Contact Info

Katherine Cort
Pacific Northwest National Laboratory
Senior Economist



Email: katherine.cort@pnnl.gov
Website: pnnl.gov