

BENEFITS OF Daylighting SERIES



Skylights and Photovoltaic Panels - The Optimum Solar Roof Application

Sunoptics®, the leader in integrated daylighting solutions, presents this educational series on the benefits of daylighting where we live, work and learn.

The Optimum Solar Roof Application

Over the last several years, there has been an increase in commercial, industrial, and educational buildings adding photovoltaic (PV) panels to their roofs to help lower energy costs, gain tax incentives and increase their goal of moving toward Net-Zero Energy-Efficient Buildings. The addition of solar panels to a roof has often created a misnomer that designers and builders must “choose” between adding solar panels or adding skylights. But what if there wasn’t a need to choose? Both skylights and solar panels use the power of the sun to provide green energy efficiencies, and both can be accommodated on a roof deck in both new construction and even renovation. The sun’s power comes in many forms. Our ability to capture the value only multiplies when both active solar from PV, and passive solar from high-performance daylighting, are utilized in tandem.

The Shared Roof Space

A well-balanced and shared roof space is achievable with both skylights and solar panels, creating net-zero energy lighting from daylight on the interior of the space while allowing net-zero energy production through PV panels on the top of the roof. The use of energy efficiency from daylighting, with high-performance skylights and integrated lighting controls, along with zero-carbon energy production from PV, takes advantage of all the valuable properties that the sun produces, including the documented human productivity increases that come from human exposure to natural daylight. Despite concerns that skylights take up too much of the roof space when considering solar PV, a typical warehouse application only uses 2% - 3% of the total roof footprint for an effective application. In Retail, that quantity can range from 3.5% - to 5% of the total roof footprint, still leaving 95% of the roof for effective PV and HVAC layout and design. Also, as light energy is either the largest electricity draw or one of the most significant electricity draws in warehouse and retail applications, the energy produced by solar PV can be better distributed to meet the

needs of non-lighting electricity uses, including excess production that can flow back to the utility or even be considered as carbon offset credit opportunities. These types of “solar co-generation” applications provide an excellent opportunity to building owners or operators as they strive to reach their ‘Net-Zero’ goals.

Harmonious Design Intent — Skylights & PV Panels

Similar to the efficiencies of PV panels, skylights also offer different efficiencies based on the shape and material used. Sunoptics® Signatures™ Series Skylights’ patented dome shape captures low angle daylight (early morning/late afternoon), allowing the interior of the space to receive more natural light throughout the entire daylight hours. This proprietary shape coupled with Sunoptics’ prismatic material offers an even spread of light throughout the space. This also equates to fewer skylights needed, with greater efficiencies gained through Sunoptics’ skylight technologies.

Higher efficiency solar panels, coupled with multiple Sunoptics skylight size options and curb height options, can create the most efficient roof applications for industrial, commercial, educational, and retail buildings. The best way to help configure the roof space needed for both daylighting and solar panels is to design with daylighting using *Visual Design Tools* (<https://www.acuitybrands.com/resources/customer-tools/visual-lighting-software>) to confirm the number of skylights needed to meet the



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Skylights and Photovoltaic Panels continued...

foot candles desired in a space. Skylights take from 2% to 5% of the roof area, allowing the rest to be used for solar panels and HVAC. Using today's design tools, we can easily calculate the number of Sunoptics skylights needed to meet the daylighting demand, solar panels required to complete the energy savings demand, and together design a shared roof space that optimizes both.

The Sunoptics Difference

Since 1978, Sunoptics® has been a trusted partner for providing superior natural light and leak-free products for roofers, architects, and building owners. To ensure high-grade products, Sunoptics extrudes its own plastics using high-quality materials. This allows for total quality control of the manufacturing process and optical quality of the lenses.

As part of the Acuity Brands® portfolio, Sunoptics® offers the advantage of providing holistic daylighting product solutions consisting of skylights, LED luminaires, and advanced lighting controls from one source.

The Sunoptics Advantage: Sunoptics® products are tested and certified by independent third-party organizations to ensure compliance with safety, quality, and performance standards. Third-party test results are available on Sunoptics.com.

At Sunoptics®, we believe,

There's No Greater Efficiency Than Off!®

About the Author:

Dana Carlson, MBA, is the Director of Product Market for Sunoptics® Prismatic Skylights and Daylighting Systems, an Acuity Brands Company. Dana has spent her career educating, promoting, and marketing daylighting solutions for the residential, commercial, and educational markets. She is passionate about the benefits of daylight and human well-being, emphasizing the importance of the total lighting solution, including daylighting, electric lighting, and controls to create a well-illuminated and healthy environment.



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