



BENEFITS OF Daylighting

SERIES



Daylighting as an ESG Initiative

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

Why is ESG Important?

In the investment world and the world of publicly traded companies, the drive for active Environmental, Social, and Governance (ESG) initiatives has taken center stage. To understand why these initiatives have taken the limelight, we need to understand what is driving them. ESG is a system for measuring a company's sustainability or investment in three specific categories: environmental, social, and governance. Socially responsible investing, ethical investing, and sustainable investing are more general terms driving the need for companies to stand up and take notice as more and more institutional investors mandate that any organization they will invest in has implemented and documented its own ESG programs.

So why are investors and businesses putting so much emphasis on ESG today? In 2019, Morgan Stanley, through their Institute for Sustainable Investing, published a white paper titled, "[Sustainable Reality: Analyzing Risk and Returns of Sustainable funds](#)." In this white paper, research was conducted on the performance of nearly 11,000 mutual funds from 2004 to 2018 that showed that there was no financial trade-off in the returns of sustainable funds compared to traditional funds, as well as they demonstrated lower downside risk. In fact, the research showed that during a period of extreme volatility, they saw strong statistical evidence that sustainable funds are more stable and that incorporating environmental, social, and governance (ESG) criteria into investment portfolios may help to limit market risk. The fact that traditional financial and investment organizations have seen how leading this movement is not only an opportunity, but it is also the right thing to do for both the environment and employees, and shareholders.

ESG is Not Just a Fad

This movement in ESG is not just a fad. It has taken roots deep in some of the largest companies and investors in the world. Take BlackRock, for instance. BlackRock, Inc. is the world's largest asset manager, with a portfolio in excess of 9.5

trillion dollars. In 2022, Blackrock CEO, Larry Fink, penned his annual letter to CEOs with the title, "[The Power of Capitalism](#)." In his letter, Mr. Fink tackles the subject of "Capitalism and Sustainability," where he states, "Every company and every industry will be transformed by the transition to a net-zero world. The question is, will you lead, or will you be led?" Fink states, "Sustainable investments have now reached \$4 trillion. Actions and ambitions towards decarbonization have also increased. This is just the beginning – the tectonic shift towards sustainable investing is still accelerating. Whether it is capital being deployed into new ventures focused on energy innovation, or capital transferring from traditional indexes into more customized portfolios and products, we will see more money in motion." He also goes on to forecast by stating, "I believe the decarbonizing of the global economy is going to create the greatest investment opportunity of our lifetime. It will also leave behind the companies that don't adapt, regardless of what industry they are in." These are strong statements by the leader of one of the world's largest investors. ESG is not just a fad. It is quickly becoming a "must-have" and the norm.

So what does ESG have to do with Daylighting?

The solution of daylighting has so many benefits and advantages that align with the foundation of ESG. First of all, the need for sustainable solutions in energy efficiency, as part of the quest for a Net Zero economy, fits very well with passive solar daylighting solutions. A daylighting solution is a trifecta of properly diffused and dispersed daylight as your primary illumination source,





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with adaptive and responsive lighting controls tied to the most efficient, solid-state, electric lighting system. Daylighting solutions are not new to the marketplace. However, with the invention and growth of LED lighting, the watts per square foot of electrical lighting energy have been substantially reduced just since 2011. As the baseline ROI has increased from a time perspective, many organizations that once championed daylighting began to slow down or cut back on daylighting for this singular perspective. However, during the last decade, solar photovoltaic (PV) systems are flourishing on the rooftops of retail, warehouse, distribution centers, manufacturing, military bases, and air hangers —spaces where the main energy draw is from electric lighting, extending the ROI for these systems as well. As the emphasis on green energy solutions grows with the implementation of ESG, especially the push for “solar” solutions, the trifecta of daylighting systems is a perfect fit with solar photovoltaics. Typically only 3% to 5% of the roof is needed to implement high quality and highly effective daylighting initiatives, leaving 95% or more of the roof for HVAC and solar photovoltaic. Why use the visible and productive light of the sun to create electric energy through solar photovoltaic, only to bring it into the building with an inverter to power electrical lighting? Use the sun’s power to generate energy while also directing diffused and dispersed passive solar lighting for as many hours per year during daylight hours —even in overcast skies. You will have the optimum solar solution for most single-story, open-ceiling applications. Also, since daylighting is an energy efficiency measure, by minimizing the amount of annual electrical lighting usage on today’s solid-state LEDs, the longevity of the lighting systems is significantly increased, adding to the sustainability of the entire lighting system.



Daylighting Solutions Check the ‘E’ and ‘S’ Box

From an ESG perspective, daylighting solutions fit well into the Environmental “E” category. However, daylighting provides additional benefits from the Social “S” side in the form of human productivity and health/wellness benefits. If there were one thing that humans on this earth could not live without more than anything else, it would be light and heat from the sun. If the sun were to burn out and stop delivering its light and warmth to the earth, water and food wouldn’t save us. Our human biology is uniquely synced to the full spectrum, visible and non-visible, light that it produces. This synchronization is our Circadian Rhythm, tied to sunlight cues. Disrupting these patterns can lead to poor or difficult sleep. Without light signals, people tend to operate on a 25-hour schedule. Circadian rhythms also impact body temperature, pain sensitivity, mental alertness, physical strength, and the senses (source: Very Well Health, [verywellhealth.com](https://www.verywellhealth.com), How Circadian Rhythms Act as the Body’s Biological Clock, 4/11/2021). This connection to the biological need for exposure to the sun’s light produces health and well-being results for humans, recognized for centuries! If you reduce a person’s exposure to sunlight, that person’s health and productivity will be dramatically affected. Properly diffused and dispersed daylight is the biologically-perfect light for humans to use as their primary illumination source. Beyond the physical benefits around the human circadian rhythm and the human body’s absorption of vitamin D from the sun’s light, properly diffused and dispersed daylight has been third-party documented to provide



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human productivity increases in education, the workplace, and even in medical and hospital applications. One research paper, conducted by the National Renewable Energy Lab (NREL) in 2000 — Daylighting in Schools: Improving Student Performance and Health at a Price Schools Can Afford) — documented multiple studies done by third-party organizations on the human performance gains when maximizing the hours students are exposed to properly diffused and dispersed daylight. In this study, NREL documented, *“One study analyzed the test scores of more than 21,000 students in three school districts in California, Washington, and Colorado... In one school district, students with the most daylighting in their classrooms progressed 20% faster on math tests and 26% faster on reading tests when compared to students in the least daylit classrooms.”* This research paper also documented that, “In the other two school districts, students in classrooms with the most daylighting were found to have 7% to 18% higher scores than those in the least.”

These studies of human performance from daylighting with school students also translate to human performance from daylighting in other types of building uses. As the business world has begun to evaluate itself through ESG, which includes an increased corporate and social interest in the influence of indoor environments on health and human productivity, there has been a resurrected interest in the potential health and productivity benefits of daylighting. Besides the heavily documented human performance benefits found in schools with daylighting, commercial and industrial buildings have also noted reductions in worker absenteeism, higher retail sales, and better health associated with increases in daylight in anecdotal reports. One such report was a 2017 study published by the National Sleep Foundation in its Sleep Health Journal. It found that workers exposed to high levels of natural light in offices reported better quality sleep than workers who were not exposed to any natural light. Another such study, by Cornell University Professor Alan Hedge, Department of Design and Environmental Analysis, in 2018 documented that workers in daylit office environments reported an 84 percent drop in symptoms of eyestrain, headaches and blurred vision symptoms, which can detract from productivity. “The study found that optimizing the amount of natural light in an office significantly improves health

and wellness among workers, leading to gains in productivity,” said Hedge. “As companies increasingly look to empower their employees to work better and be healthier, it is clear that placing them in office spaces with optimal natural light should be one of their first considerations.” Other key findings of the study include:

- More natural light translates to more alert employees. Workers in offices with (diffused and dispersed daylight) reported a 10 percent decrease in drowsiness.
- Enhanced individual performance is tied to access to natural light. Workers sitting close to a (source) that optimized daylight exposure reported a 2 percent increase in productivity.
- Natural light creates a better indoor experience. Lack of daylight and access to views decreases the ability of the eye to relax and recover from fatigue.

Daylighting, for decades, has been mostly looked at from a dollar and cents perspective. When done as a comparable system review, passive solar daylighting can have better ROI than active solar photovoltaic systems. Additionally, daylighting has the added ROI of productivity of the employees. High-performance daylighting is critical for highly productive spaces where humans work, learn, shop, and live. In today's business environment, where a company's environmental impact and social responsibility to its employees and customers are essential, companies should actively pursue high-performance daylighting solutions in new design-build opportunities and retrofit applications.





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The Sunoptics Difference

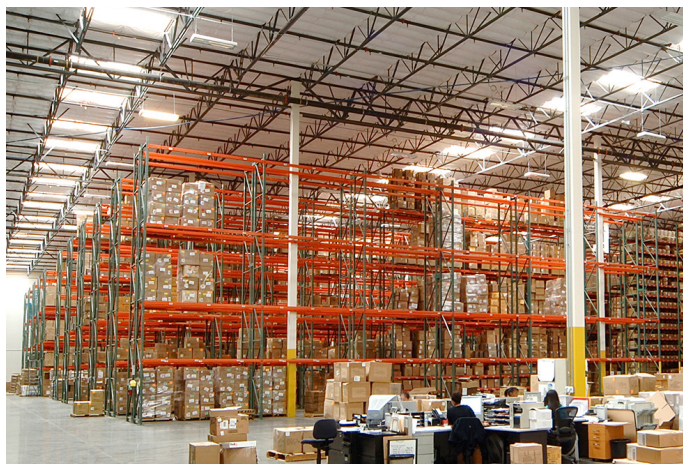
Since 1978, Sunoptics® has been a trusted partner for providing superior natural light and leak-free products for roofers, architects, and building owners. To ensure high-grade products, Sunoptics extrudes its own plastics using high-quality materials. This allows for total quality control of the manufacturing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

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There's No Greater Efficiency Than Off!®



Please visit and bookmark our Daylighting Blog at:
<https://insights.acuitybrands.com/daylighting> for more articles in the Benefits of Daylighting series.

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