

# PRESTIGE

## ARCHITECTURE

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10

SUSTAINABLE FEATURES  
*For your home*



ARCHITECTURE  
& SOCIETY *Where you live  
matters*

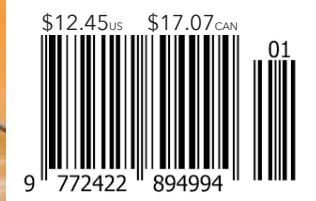


**GREEN HOMES**  
Eco-Friendly Renovations

**NATURAL  
LIGHT**  
How this affects your mood

*Engaging the Senses*  
Your **5 senses** tell you more about a space than you think

**Health & Security**  
Your space could be causing you anxiety



# THE FUTURE OF ZERO WASTE ARCHITECTURE

## SUSTAINABLE ARCHITECTURE

Eco-Friendly  
Architecture,  
2022

“Sustainable architects are able to create beautiful installations that bring aspects of the natural world into construction while providing countless benefits including improved air quality, energy efficiency, noise reduction, and mental health benefits.”



# WHAT IS SUSTAINABLE ARCHITECTURE?

The movement strives to popularize the use of recycled or Earth-friendly materials and the incorporation of renewable energy in a building's plan. One of the most important facts behind sustainable architecture is that not only are the buildings more environmentally

friendly, they are also cost-effective. Using renewable energy reduces household electricity bills up to \$2,500 per year—and these savings are even greater for public buildings and large businesses.

## THE NEGATIVE EFFECTS OF CONSTRUCTION

The UN Environment Programme reported in 2020 that the emissions from the building sector had hit a record high—with the sector “accounting for 38 per cent of total global energy-related CO<sub>2</sub> emissions.” According to their estimations, building sector emissions will need to fall by at least 6% per year in order to reach net zero emissions by 2050. Construction causes both air and water pollution. Harmful chemicals used during construction can be harmful to not only workers, but the environment as well.

In addition, concrete production uses almost 10% of the world’s industrial water use and is one of the main factors contributing to the extreme CO<sub>2</sub> emissions of the construction sector. According to LiveKindly, it also “causes heat waves” in cities due to the Urban Heat Island Effect. Making a move towards sustainable materials would not only reduce or fully remove all of these effects, but also presents

many other benefits.

## THE BENEFITS OF GREEN ARCHITECTURE

The biggest benefit of sustainable architecture is reduced carbon emissions. As seen in this graph provided by the Union of Concerned Scientists, natural gas releases 0.6 to 2lbs of CO<sub>2</sub> per kilowatt-hour, while a renewable energy source such as solar power releases just 0.07 to 0.04lbs. Comparing the high ends of both spectrums results in a 186% difference in carbon emissions.

One interesting example of sustainable architecture is the idea of “living walls”. Living walls are vertical gardens that grow plants using hydroponics. Through this method, sustainable architects are able to create beautiful installations that bring aspects of the natural world into construction while providing countless benefits including improved air quality, energy efficiency, noise reduction, and mental health benefits.

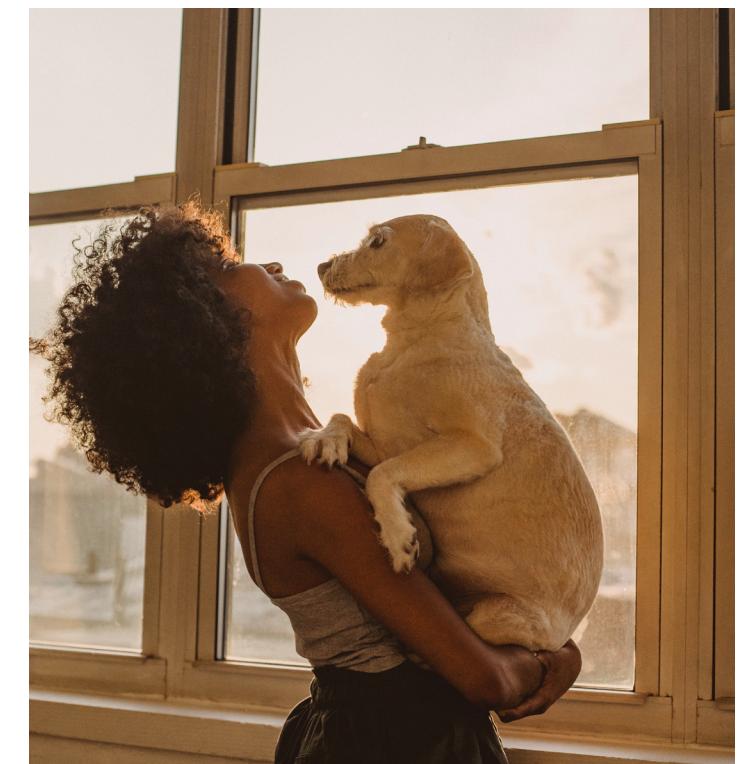
Another example of sustainable architecture are the advantages of incorporating natural light into building design. Incorporating natural light reduces the need for excessive artificial lighting during the day, ultimately cutting down on electricity usage. This, in turn, leads to lower carbon emissions and a smaller environmental footprint. Also, exposure to natural daylight has been proven to positively impact human health and well-being. Studies have shown that natural light promotes better sleep, enhances mood, reduces eye strain, boosts productivity, and even accelerates the healing process. Natural light can also create a visually pleasing environment, highlighting architectural features, colors, and textures.

It also allows for a better connection with the outdoor surroundings, creating a sense of unity with nature. Proper integration of natural lighting into built-up space increases the value of space. The spaces look larger, and large openings let the natural flow of greenery inside the building. Proper control of sunlight through



such as offices, living rooms, or classrooms near windows ensures that occupants benefit from ample daylight while reducing the need for artificial lighting. You also want to implement light-redirecting elements. Light shelves, skylights, and atriums are architectural elements designed to redirect daylight deeper into a building.

These features bounce and diffuse sunlight, effectively distributing it to areas that might other-



## EFFECTS OF NATURAL LIGHT

openings can also enhance the quality of interior decorations. Research also suggests that employees working in well-lit environments experience higher productivity levels. Natural light helps regulate circadian rhythms, improving focus, alertness, and overall performance. Reduced reliance on artificial lighting can lead to significant cost savings. Lower energy con-

sumption means decreased utility bills, making natural light an economically viable choice. To fully leverage the potential of natural light, architects and designers employ various strategies throughout the building design process. The first is strategic site orientation. Orienting a building to maximize exposure to the sun can enhance natural light intake. South-facing win-

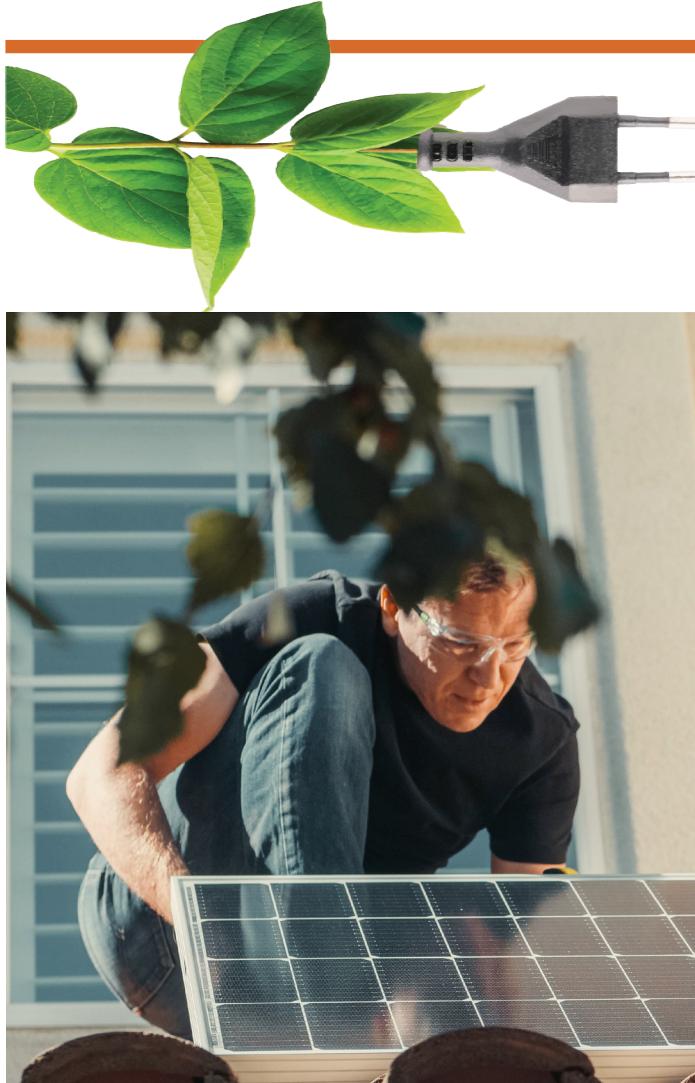
dows receive the most sunlight throughout the day, while north-facing windows provide softer, diffused light. A skilled architect takes advantage of these factors to optimize the building's daylight potential.

The positioning of rooms and spaces within a building also greatly influences the distribution of natural light. Placing frequently used areas

wise be poorly lit. By strategically placing these elements, architects can create visually appealing spaces flooded with natural light. There are many other ways to implement natural light into your design, and by embracing some of these strategies, architects can create buildings that not only minimize environmental impact but also enhance the human experience.

No matter your reason, understanding how investing in energy-efficient features can potentially affect your finances can help you make the right choices for your situation.

There are several factors to consider with investing in energy-efficient building, including the costs, health benefits, impact on the environment, and potential profits. Tax credits can also play a role in whether these are worthwhile



investments.

Under the Inflation Reduction Act of 2022, signed into law Aug. 16, 2022, consumers can get a 30% credit, or up to \$2,000 per year, for home efficiency improvement projects like heat

pumps, efficient exterior windows and door, or biomass stoves and boilers. They can also receive 30% tax credits through 2032 for rooftop solar panels or other renewable energy projects like wind or geothermal systems. After 2032, the credits phase down.

Green buildings in the right locations can realize zero utility bills. As a result of the Inflation Act

of 2022, you can receive a tax credit of 30% for solar electric systems, solar water heaters, geo-thermal heat pumps, and small wind turbines if the costs are incurred from 2022 to 2032.<sup>2</sup> A green building can save on heating and utilities bills and may have a higher appraised value, making resale easier.

Energy efficient buildings are healthier because

they are built with natural products that have fewer dangerous chemicals. This can decrease allergies, asthma, and other respiratory problems, saving health costs. In addition, the higher-quality building materials are more durable and should require fewer repairs. Depending on natural resources also reduces carbon footprint.

A recent research effort led by Germany-based Fraunhofer ISI, the Multiple Benefits Project, performed 25 assessments of industrial and building/tertiary energy efficiency projects

## EFFECTS OF ENERGY EFFICIENCY



and found non-energy benefits in each also. Another outcome of this project is a training module to help stakeholders identify non-energy benefits and integrate them into return on investment (ROI) estimates for energy efficiency projects. One Better Plants partner, 3M, has utilized this training to monetize NEBs for their energy efficiency work, and will present on their experience at the 2022 Better Buildings, Better Plants Summit in the session “Bonus Points: Adding Up the Non-Energy Benefits of Energy Efficiency.”

When non-energy benefits are included in industrial energy assessments, organizations can better understand the full impact of energy efficiency, resulting in more comprehensive and accurate ROI calculations. In turn, understanding, quantifying, and communicating non-energy benefits can help increase stakeholder buy-in for energy efficiency projects.