





LEARNING OBJECTIVES



- Overview of Energy and Atmosphere
- Energy efficiency in green building
- Commissioning Process in Green Buildings
- Renewable Energy in Green Buildings
- Importance of Energy Efficiency in Green Building.

OVERVIEW

The Energy and Atmosphere (EA) category takes a holistic approach to energy by tackling energy use reduction, energy-efficient design solutions, and renewable energy.

The current global energy resource balance is significantly weighted toward oil, coal, and natural gas.

In addition to releasing greenhouse gases, some resources are nonrenewable, meaning that their quantities are finite or they cannot be replaced as quickly as they are consumed.



ENERGY AND ATMOSPHERE



The Energy and Atmosphere (EA) category approaches energy from a holistic perspective, addressing energy use reduction, energy-efficient design strategies, and renewable energy sources



CRITERIA IN THIS CATEGORY

EA PR FUNDAMENTAL COMMISSIONING AND VERIFICATION

EA PR MINIMUM ENERGY PERFORMANCE

EA PR BUILDING-LEVEL ENERGY METERING

EA PR FUNDAMENTAL REFRIGERANT MANAGEMENT

EA CR ENHANCED COMMISSIONING/EA CR OPTIMIZE ENERGY PERFORMANCE

EA CR ADVANCED ENERGY METERING / EA CR DEMAND RESPONSE

EA CR RENEWABLE ENERGY PRODUCTION / ENHANCED REFRIGERANT MANAGEMENT



MAXIMUM POSSIBLE CREDITS : 4 P / 33 C

ENERGY EFFICIENCY IN GREEN BUILDINGS

A green building's energy efficiency begins with an emphasis on design elements that lower total energy demands, such as building orientation, glass selection, and the use of climate-appropriate construction materials.

Passive heating and cooling, natural ventilation, and high-efficiency HVAC systems coupled with intelligent management can further reduce a building's energy use.

The generation of renewable energy on the project site or the purchase of green power enables a portion of the remaining energy demand to be fulfilled with non-fossil fuel energy, hence reducing the requirement for conventional sources.

GREEN BUILDING & ENERGY AND ATMOSPHERE



The electricity for the building should be generated on-site from renewable sources such as solar or geothermal energy.

Developers should eliminate the usage of chlorofluorocarbons (CFCs) from heating, ventilation, air conditioning, and refrigeration (HVAC & R) systems while converting an old building into a green structure. Eliminating the usage of CFCs minimizes ozone depletion and prevents the health concerns caused by exposure to high quantities of these substances.

The energy systems of the building should be optimized to exceed the requirements established by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers and the Illuminating Engineering Society of North America.



COMMISSIONING PROCESS IN GREEN BUILDINGS



The commissioning procedure is essential for assuring the performance of buildings. By ensuring that the design fulfills the owner's project specifications and performs as intended, early engagement of a commissioning authority prevents long-term maintenance concerns and energy waste.

In an operationally effective and efficient building, the staff is aware of the installed systems and how they operate. Staff must be trained and amenable to learning new approaches for optimising system performance in order for an efficient design to result in an efficient system.



RENEWABLE ENERGY IN GREEN BUILDINGS



The EA category acknowledges that the decrease of fossil fuel consumption extends far beyond the building's walls. By enrolling in a demand response program, projects can contribute to the improvement of the grid's efficiency.

Demand response enables utilities to request that buildings reduce their electricity consumption during peak hours, so lowering the load on the grid and the need to operate additional power plants, and potentially eliminating the expense of building new plants.

Similarly, on-site renewable energy not only reduces the market's reliance on fossil fuels, but it may also serve as a reliable local electricity source that prevents transmission losses and system strain.



RENEWABLE ENERGY IN GREEN BUILDINGS

The American Physical Society has determined that if current and emerging cost-effective energy efficiency measures are implemented in new buildings and existing buildings as their heating, cooling, lighting, and other equipment is replaced, the projected 30% increase in energy demand from the building sector between now and 2030 could be reduced to zero.

The EA segment supports the goal of reduced energy demand through credits relating to usage reduction, energy-efficient design, and renewable energy supplementation.

The Energy category focuses on improving the design and energy performance of the development in a way that has a direct and positive effect on the consumption of resources and environmental quality, including climate change, fossil fuel depletion, air pollution, and human comfort, health, and well-being.



IMPORTANCE OF ENERGY EFFICIENCY IN GREEN BUILDING

It is not surprising that the popularity of green building continues to climb. This structure represents one of the largest worldwide investment opportunities of the next decade, with an estimated value of 24.7 trillion USD by 2030, according to the International Finance Corporation.

Buildings are responsible for around forty percent of the world's annual CO2 emissions.

Building activities are responsible for 28% of these annual emissions, while building materials and construction (referred to as embedded carbon) are responsible for the remaining 11%.

In addition to significant cost savings, "green" construction presents a significant chance to lessen negative consequences on human health and the environment as a whole.



WHAT DOES "GREEN BUILDING" MEAN?

Green Building, also known as Sustainable Building, is the practice of constructing structures and employing procedures that are ecologically responsible and resource-efficient across a building's whole life-cycle, from construction to energy, materials, and water efficiency.

This construction extends upon and augments the usual building design considerations of economy, utility, durability, and comfort.

For a building to be considered Green, it must be Energy Efficient.

Global expenditures on energy efficiency in buildings climbed by 3 percent in 2019 to USD 152 billion across all markets. (Per the United Nations Environment Programme)



WHAT DOES "GREEN BUILDING" MEAN?

Energy efficiency is defined as the use of less energy to achieve the same output, and it does more than lessen the climatic effect of buildings; it also plays a significant role in harnessing sufficient renewable electricity sources such as wind and solar.

A green building uses less energy overall, which can significantly reduce a structure's carbon footprint or even have a net positive environmental impact. Intelligent Energy Management is essential because it minimizes carbon emissions from residential energy systems.





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