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What is Green Building?

Definition of Green Building

Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort. Green building is also known as a sustainable or high performance building. Impacts of the built environment:

Aspects of Built Environment:	Consumption:	Environmental Effects:	Ultimate Effects :
Siting Design Construction Operation Maintenance Renovation Deconstruction	Energy Water Materials Natural Resources	Waste Air pollution Water pollution Indoor pollution Heat islands Stormwater runoff Noise	Harm to Human Health Environment Degradation Loss of Resources

Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by:

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environmental degradation

For example, green buildings may incorporate sustainable materials in their construction (e.g., reused, recycled-content, or made from renewable resources); create healthy indoor environments with minimal pollutants (e.g., reduced product emissions); and/or feature landscaping that reduces water usage (e.g., by using native plants that survive without extra watering).

Why Build Green?

Green Buildings can save money on energy, water operation and maintenance costs. Green buildings often enhance residential health and result in greater worker productivity through improved air quality and day lighting.

The built environment has a vast impact on the natural environment, human health, and the economy. By adopting green building strategies, we can maximize both economic and environmental performance. Green construction methods can be integrated into buildings at any stage, from design and construction, to renovation and deconstruction. However, the most significant benefits can be obtained if the design and construction team takes an integrated approach from the earliest stages of a building project. Potential benefits of green building can include:

Environmental benefits

- Enhance and protect biodiversity and ecosystems
- Improve air and water quality
- Reduce waste streams
- Conserve and restore natural resources

Economic benefits

- Reduce operating costs
- Create, expand, and shape markets for green product and services
- Improve occupant productivity
- Optimize life-cycle economic performance

Social benefits

- Enhance occupant comfort and health
- Heighten aesthetic qualities
- Minimize strain on local infrastructure
- Improve overall quality of life

Why is Green Building Important to you?

As the world's population continues to increase, more demands are placed on the earth's natural resources to provide those materials necessary for building construction. Natural resources are limited, the costs to extract them are great, and this use of resources has a negative impact on the environment. In the United States alone, building account for:

- 39% of total energy use
- 12% of total water consumption
- 68% of total electricity consumption
- 38% of total carbon dioxide emissions (US EPA, Statistical Summary)

Is it more expensive to build green?

Perhaps surprisingly, good green buildings often cost only a few percentage points or no more to build than conventional designs. Integrated design processes that identify the most efficient, holistic approaches to building green can reduce these initial costs. For example, in some cases, when buildings are carefully designed to be energy efficient, heating/ventilation/air conditioning (HVAC) equipment can be downsized for significant savings. There are also many green products and materials that cost the same or even less than conventional ones.

Green Building Checklist

Whether you're a homebuyer or a renter looking for a green home, how do you know if a home is truly green? What should you look for? This checklist will help you identify a truly green home that's better for your family's health, costs less to operate and has fewer environmental impacts.

- **Location** New green homes and neighborhoods must not be built on environmentally sensitive sites such as prime farmland, wetlands or endangered species habitats. The greenest development sites are "in-fill" properties such as former parking lots, rail yards, shopping malls and factories. Look for compact development where the average housing density is at least six units per acre. Your home should also be within easy walking distance of public transportation—bus lines, light rail and subway systems—so that you can leave your car at home. Ideally, the home would be within walking distance of parks, schools and stores. See how many errands you can carry out on a bicycle. That's healthier for you, your wallet and the environment.
- **Size** No matter how many green building elements go into your home, a 5,000-square-foot green home still consumes many more natural resources than a 2,000-square-foot green home. The larger home will also require more heating, air conditioning and lighting. If you really want a sustainable home, choose a smaller size.
- **Building Design** The home should be oriented on its site to bring abundant natural daylight into the interior, which will reduce lighting requirements and take advantage of any prevailing breezes. Windows, clerestories, skylights, light monitors, light shelves and other strategies should be used to bring daylight to the interior of the house. The exterior should have shading devices (sunshades, canopies, green screens and—best of all—deciduous trees), particularly on the southern and western facades and over windows and doors, to block hot summer sun. Dual-glaze windows reduce heat gain in summer and heat loss during cold winter months. The roof should be a light-colored, heat-reflecting Energy Star roof, or a green (landscaped) roof, to reduce heat absorption.
- **Green Building Materials** A green home will have been constructed or renovated with healthy, nontoxic building materials and furnishings, like low- and zero-VOC (volatile organic compound) paints and sealants and nontoxic materials such as strawboard for the subflooring. Wood-based features should come from rapidly renewable sources like bamboo, but if tropical hardwoods are used, they must be certified by the [Forest Stewardship Council](#). A green home uses salvaged materials such as kitchen tiles and materials with significant recycled content.
- **Insulation** Nontoxic insulation, derived from materials such as soy or cotton, with a high R (heat resistance) factor in a home's walls and roof will help prevent cool air leakage in the summer and warm air leakage in the winter.
- **Windows and Doors** Windows and exterior doors should be [Energy Star](#) certified, and they should seal tightly to avoid heat gain in summer and heat loss in winter.
- **Energy Efficiency** A green home has energy-efficient lighting, heating, cooling and water-heating systems. Appliances should be [Energy Star](#) certified.
- **Renewable Energy** Ideally, the home would generate some of its own energy from renewable sources, using technologies such as photovoltaic systems.
- **Water Efficiency** A green home has a water-conserving irrigation system and water-efficient kitchen and bathroom fixtures. Look for a rainwater collection and storage system, particularly in drier regions where water is increasingly scarce and expensive.
- **Indoor Environmental Quality** Natural daylight should reach at least 75 percent of the home's interior. Natural ventilation (via building orientation, operable windows, fans, wind chimneys and other strategies) should bring plentiful fresh air inside the house. The HVAC system should filter incoming air and vent stale air outside. The garage should not have any air-handling equipment or return ducts, and it should have an exhaust fan.
- **Landscaping** Vine-covered green screens, large canopy trees and other landscaping should shade exterior walls, as well as the driveway, patios and other "hardscape" features, to minimize heat islands. The yard should be landscaped with drought-tolerant plants rather than water-guzzling plants and grass in most regions.