

Understanding Green Build



What is a Green Build?

Sustainable, or "**Green Build**" design and construction provide an opportunity to *use resources more efficiently*, while creating *healthier* and *more energy-efficient buildings*. A successful green build leaves a lighter footprint on the environment through conservation of resources, while at the same time balancing energy-efficient, cost-effective, low-maintenance products for construction needs. In other words, Green Build design involves finding the delicate balance between construction/installation and a sustainable environment.

Green Build design is not merely the use of energy-efficient materials. It also involves the creation of products and systems that leave a light footprint on the environment over the full life-cycle - from production to transportation, installation, use and renewal. As such, sustainable green design should be thought of as a **process**, not just a goal - allowing for a broader evaluation of the environmental, economical and societal impacts of products as single units and as part of their environment.

What Makes a Building a Green Build Structure?

A building constructed with a Green Build approach is a structure that is designed, built, renovated, operated, or reused in an ecological and resource-efficient manner.

A Green Build structure is designed to meet certain **key objectives** such as:

- Protecting occupant health
- Improving employee productivity
- Using energy, water, and other resources more efficiently
- Reducing the overall impact on the environment

What Are the Economic Benefits of a Green Build?

A Green Build may seem to cost more up front, but saves through **lower operating costs** over the life of the building. The "Green Build" approach applies a project life cycle cost analysis for determining the appropriate up-front expenditure. This analytical method calculates costs over the useful life of the asset.

These and other cost-savings can only be fully realized when they are incorporated at the project's conceptual design phase with the assistance of an integrated team of professionals. The integrated systems approach ensures that the building is designed as one system rather than a collection of stand-alone systems.

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What Are the Elements of a Green Build?

Siting

- Start by selecting a site well suited to take advantage of mass transit
- Protect and retain existing landscaping and natural features
- Select plants that have low water and pesticide needs, and generate minimum plant trimmings
- Use recycled content paving materials, furnishings, and mulches to help close the recycling loop

Energy Efficiency

- Passive design strategies can dramatically affect building energy performance. These measures include building shape and orientation, passive solar design, and the use of natural lighting.
- Develop strategies to provide natural lighting
- Install high-efficiency lighting systems with advanced lighting controls
- Include motion sensors tied to dimmable lighting controls
- Use a properly sized and energy-efficient heat/cooling system in conjunction with a thermally efficient building shell
- Maximize light colors for roofing and wall finish materials; install high R-value wall and ceiling insulation; and use minimal glass on east and west exposures
- Minimize the electric loads from lighting, equipment, and appliances
- Consider alternative energy sources such as photovoltaic and fuel cells that are now available in new products and applications. Renewable energy sources provide a great symbol of emerging technologies for the future.
- Computer modeling is an extremely useful tool in optimizing design of electrical and mechanical systems and the building shell

Materials Efficiency

- Select sustainable construction materials and products by evaluating several characteristics, such as reused and recycled-content; zero or low off-gassing of harmful air emissions; zero or low toxicity; sustainable harvested materials; high recyclability; durability; longevity; and local production
- Use dimensional planning and other material efficiency strategies. These strategies reduce the amount of building materials needed and cut construction costs.
- Reuse and recycle construction and demolition materials
- Require plans for managing materials through deconstruction, demolition, and construction
- Design with adequate space to facilitate recycling collection and to incorporate a solid waste management program that prevents waste generation

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Water Efficiency

- Design for dual plumbing to use recycled water for toilet flushing or a gray water system that recovers rainwater or other non-potable water for site irrigation
- Minimize wastewater by using ultra low-flush toilets, low-flow shower heads, and other water conserving fixtures
- Use re-circulating systems for centralized hot water distribution
- Install point-of-use hot water heating systems for more distant locations
- Use a water budget approach that schedules irrigation
- Meter the landscape separately from buildings. Use micro-irrigation (which excludes sprinklers and high-pressure sprayers) to supply water in non-turf areas
- Use state-of-the-art irrigation controllers and self-closing nozzles on hoses

Occupant Health and Safety

- Recent studies reveal that buildings with good overall environmental quality can reduce the rate of respiratory disease, allergy, asthma, sick building symptoms, and enhance worker performance.
- Choose construction materials and interior finish products with zero or low emissions to improve indoor air quality. Many building materials and cleaning/maintenance products emit toxic gases, such as volatile organic compounds (VOC) and formaldehyde. These gases can have a detrimental impact on occupants' health and productivity.
- Provide adequate ventilation and a high-efficiency, in-duct filtration system. Heating and cooling systems that ensure adequate ventilation and proper filtration can have a dramatic and positive impact on indoor air quality.
- Prevent indoor microbial contamination through selection of materials resistant to microbial growth, provide effective drainage from the roof and surrounding landscape, install adequate ventilation in bathrooms, allow proper drainage of air-conditioning coils, and design other building systems to control humidity.

Building Operation and Maintenance

- Green build measures cannot achieve their goals unless they work as intended. Building commissioning includes testing and adjusting the mechanical, electrical, and plumbing systems to ensure that all equipment meets design criteria.
- It also includes instructing the staff on the operation and maintenance of equipment.
- Over time, building performance can be assured through measurement, adjustment, and upgrading.
- Proper maintenance ensures that a building continues to perform as designed and commissioned.

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How Burgess Services can Help You to Adopt Green Build Measures

- Establish a vision that embraces sustainable principles and an integrated design approach
- Develop a clear statement of the project's vision, goals, design criteria, and priorities
- Develop a project budget that covers green building measures. Allocate contingencies for additional research and analysis of specific options. Seek sponsorship or grant opportunities
- Seek advice of a design professional with Green Build experience
- Select a design and construction team that is committed to the project vision. Modify the RFQ/RFP selection process to ensure the contractors have appropriate qualifications to identify, select, and implement an integrated system of Green Build measures.
- Develop a project schedule that allows for systems testing and commissioning
- Develop contract plans and specifications to ensure that the building design is at a suitable level of building performance
- Create an effective incentives and oversight plan

LEED Accreditation

LEED stands for Leadership in Energy and Environmental Design, the U.S. Green Building Councils nationally accepted standard for designing, building and operating a high-performance **Green Build**. Through LEEDs rigorous accreditation program, **Burgess engineering professionals** demonstrate their mastery of Green Build principles and practices, as well as the criteria a facility must satisfy for LEED certification.