



EMERALD BUILT
ENVIRONMENTS
developing a sustainable future

A guide to sustainable building certifications

We transform
buildings, roadways,
neighborhoods
and developed
land to achieve a
healthy economy and
environment.

Emerald Built Environments
has touched over

250

certification projects covering

20

million square feet across the
United States
and internationally

The team has many firsts, several
award winners and

7

LEED Platinum projects



LEED, or Leadership in Energy and Environmental Design, is an international certification that gives a framework for healthy, efficient, and cost-saving green buildings. It is a globally recognized achievement.

BREEAM[®]



BREEAM is an international assessment method for master planning, infrastructural, and building projects seeking sustainability. This assessment is completed through third party certification that examines environmental, social, and economic sustainability performance.



The Well Building Standard examines how design, operations, and behavior within a project can be optimized for human health and well-being. It expires and requires recertification after 3 years.



**LIVING
BUILDING
CHALLENGE**SM



The Living Building Challenge is an international performance standard that seeks to create projects and spaces that give more than they take. These projects are meant to create a positive impact on both the humans and natural systems with which they interact. To achieve LBC certification, all requirements have to be met. Existing buildings without renovations will have a hard time meeting them all.



Arc is a tool for LEED certified buildings, as well as buildings that have not yet been certified but are seeking sustainable goals. Arc calculates a performance score across energy, water, waste, transportation, and human experience. This program examines project performance and allows that information to be shared.



Green Globes is an online tool for assessing green building design and operation management. It utilizes third party assessment to provide market recognition of a building's environmental attributes.



Energy Star is an EPA rating system that utilizes percentages 1-100% to express how a building performs in relation to other buildings. This rating is used to evaluate energy performance for an entire building, to reflect actual metered energy consumption, to account for different energy sources, to normalize for building activity and to provide a peer group comparison.



Enterprise Green Communities' goal is to improve the quality of affordable housing by improving the health of residents, reducing amount spent on utilities, and providing more opportunities via connections to transportation, quality food and healthcare systems. Existing buildings without renovations are not eligible for the certification.



Passive House Institute's mission is to create high-performance passive building based on the Department of Energy's research regarding climate conditions and market conditions. This standard seeks a balance between investment and payback by considering variables such as climate zone, source energy, and costs.



SITES is a certification framework that encourages landscape architects, engineers, and others toward design and practices that protect ecologies and enhance the benefits they provide to communities. SITES embraces unique conditions of each project, and encourages flexibility in design, in a fightback against the negative impact of urbanization.



NGBS provides practices for the design and construction of all types of green residential buildings, renovations, and land developments. It utilizes third-party verification to ensure projects are built in compliance with NBGS. It focuses on creating healthy homes, lowering operating costs, and promoting a sustainable lifestyle. Existing building without renovations are not eligible for the certification



Fitwel is a standard that applies to multi-family residential as well as workplace properties developed by the Center for Active Design. It uses evidence-based design and operational strategies to address a broad range of health behaviors and risks. Fitwel focuses on health as an interconnected system, not a series of separate categories. While it addresses materials, it looks only at the health aspect of products.

CO₂

GREENHOUSE GAS EMISSIONS

Buildings consume one-half of all energy consumed in the United States, three-quarters of all electricity and generate one-half of CO₂ emissions. Transforming the way buildings are built and maintained can play a huge role in minimizing the environmental degradation caused by greenhouse gas emissions.



EXISTING BUILDINGS

It is estimated over 75% of the existing buildings today will still be in use in 15 years. Existing buildings offer the greatest opportunity for energy reduction and improvement in indoor environmental quality. They also present the biggest challenge for implementation of energy conservation measures, as they often lack meaningful data and capital resources. Energy Audits as part of a retro-commissioning process can help building owners review options and focus on those that demonstrate the best financial payback.



ENERGY EFFICIENCY

Energy efficiency requires intentional efforts by the entire design team, not just the engineers. Incorporating Integrated Design will help the team maximize efficiency by evaluating options from site selection to finishes, all of which can help reduce the need for energy consumption. For existing buildings, a retro-commissioning process can be implemented, identifying opportunities to achieve better building performance for energy-using systems.



INTERIOR QUALITY

According to the World Health organization, humans now spend 90% of their lives indoors. Indoor quality plays into people's health and wellness and can either increase or decrease productivity. High quality interior spaces are critical to creating healthy and productive places for people to live, work and play.



SOLAR /RENEWABLE ENERGY

Photovoltaics panels (PV panels) are becoming increasingly popular as prices drop and technology improved. PV panels can now be integrated into any face of a building, from roofs to facades and beyond. Leveraging renewable energy to offset grid-supplied electricity directly helps reduce greenhouse gas emissions. It also helps ensure energy supply during outages.



SUSTAINABLE MATERIALS

Sustainable materials such as those which are naturally occurring, locally sourced, recycled, recyclable, and biodegradable are becoming more and more critical in the contemporary building market. These materials directly help reduce the negative effects of greenhouse gas emissions by reducing the reliance on fossil-fuel generated energy for manufacturing and distribution. In some instances, such as paints and coatings, they improve the indoor quality by reducing off-gassing from harmful chemicals.



ENERGY MANAGEMENT SYSTEMS

Energy Management Systems (EMS or BMS) monitor and automate energy consumption, lighting, and HVAC systems to facilitate ideal operations and efficiency. The EMS equipment in the building directly communicates with the technical infrastructure and utilities to create a building that is optimized across all of its energy systems. Optimization of systems through EMS results in early detection on failures and higher levels of efficiency.



LIFE-CYCLE AND FACILITY MANAGEMENT

Life-cycle analysis is a framework for evaluating the financial and environmental impact of design choices throughout the building and its materials and systems functional use term. When engaged in life-cycle analysis, teams examine all aspects of a building's design elements ranging from material choices and energy-using systems to fully understand the impact upon the environment from manufacturing and distribution of those items, operational requirements such as cleaning and maintenance to feasibility of recycling or re-use at end-of-life. Life-cycle analysis helps teams committed to higher sustainable performance understand the true impact of decisions from first cost to environmental impact.



MONITORING PERFORMANCE

Recording and monitoring energy and water use, waste and CO₂ emissions allows building operations to assess how the building performs versus target values. Measuring performance facilitates better financial management and outcomes.



DIGITIZING

EMS systems, home-automation devices such as wifi-thermostats and plugs and IoT devices allow ongoing collection of energy-consuming data. Internal operational practices of measuring and monitoring performance on other performance indicators such as waste and recycling. By digitizing data and presenting meaningful information to users and stakeholders, such as performance against goals, organizations are able to reach goals through ongoing and active management.

CO₂

