

sustainable building

"...the modern architect has produced the most flagrantly uneconomic and uncomfortable buildings ... inhibited only with the aid of the most expensive devices of heating and refrigeration ... glass-sheathed buildings without any contact with fresh air, sunlight or view."

Louis Mumford, architectural critic and social commentator, 1960

Forty years of building and not much has changed. For the most part, today's buildings, whether office complexes or homes, are designed and constructed with little thought given to the environmental impacts of building materials used, land use patterns, long-term maintenance and operation and, most importantly, comfort for the occupants. And while it's true that today's buildings are more energy efficient than those of forty years ago, the average home, school, office, hotel or commercial structure still wastes large amounts of energy and water. They are far more expensive to heat and cool than necessary, and they over-use resources in their construction and operation. And the occupants are still uncomfortable.

There is, however, a small and growing contingent that recognizes the need for not continuing "business as usual" and is willing to buck a conservative industry by "going sustainable and green." These architects, builders and developers are beginning to capitalize on the growing trend of sustainable design that makes their projects more marketable, saves money and wastes fewer resources, even as it makes the building occupants comfortable and productive.

Sustainable buildings are not a new style of construction - they represent a change in how we think about, design, construct and operate buildings. Sustainable and green buildings use "off the shelf materials and equipment" and, in fact, as architectural and environmental issues become more interwoven, can be very compelling to the architect, builder and owner.

Why Green?

Why not green? Sustainable buildings cost less to heat, cool and light. That means lower operating costs for the owner. Sustainable buildings have shown improved comfort and performance for the occupants. That translates into higher sales prices and rents for the builder and developer.

Sustainable buildings produce less pollution because they use less energy. They make wisely use natural resources in their construction by lowering the consumption of building materials. Most importantly, they are healthier spaces to live and work.

Many builders are reluctant to consider constructing "green" because they believe the marketplace is not interested. The fear the public views sustainable buildings as "something strange." Moving off the "tried and true" path is always uncomfortable; however, those builders willing to take the risk have found a very responsive audience. Take, for instance, the [Four Times Square](#) commercial structure in New York City. The developer and builder of this 48 story, 1.6-million-square-foot green giant, committed to environmental responsible design. This building includes high energy efficiency features, indoor air quality, sustainable materials and responsible construction, operations and maintenance. As a result, Four Times Square commands top dollar from its willing occupants and is 100 percent occupied.

Five Basic Principles

Sustainable building practices consider environmental factors, human health and well-being, in addition to the traditional criteria of function, cost and aesthetics. According to the Primer on Sustainable Building by the [Rocky Mountain Institute](#); there are five "must do" principles an architect, developer and builder should consider before starting a sustainable project.

1. **Green is a building philosophy not a building style.** It's not the green features that dominate the architecture. Energy efficiency and sustainable measures are basically invisible and can be blended into any design.
2. **Thorough planning.** There is no substitute for taking enough time to "think through" all the sustainable features you want included in the structure. Sustainable buildings are front-loaded - extra work must be done in the planning stage to incorporate green features into the design.

Green buildings are not after-thoughts. The green agenda is an ambitious one and, at first glance, is intimidating. Today, these building types require more planning and thought for the developer and builder. More lead time is needed to understand new information and become comfortable with new building products and approaches.

3. **Sustainable buildings aren't necessarily more expensive or complicated.** You could spend more, and it certainly would be justified with all the quick paybacks from reduced operating costs; however it's not necessary. The success of sustainable buildings comes not from what mechanical features are included but rather, which ones are left out. The best systems are the ones you no longer need.
4. **An integrated approach is critical.** You cannot design a conventional building and then decide to add efficient technologies, natural daylighting, and green materials as an afterthought. You cannot design a green building without considering the site, the placement of the building or its impacts on the surrounding environment. Try that approach and what you get is a building that ends up as an expensive, piecemeal mess that performs only slightly better than a conventional structure that appears as a wart on the landscape.

Integration is the name of the game. For instance, upgrading windows to super efficient ones can reduce the size of the heating and cooling system you need. By spending more up front, you will have lower operating costs down the road.

5. **Minimizing energy consumption is the central goal and organizing principle.** Design elements fall into three categories: energy-saving architectural features, an energy-conserving building shell and energy-efficient mechanical devices such as water heaters and lights.

Remember, going green isn't a yes or no, all-or-nothing proposition. Once you make the decision to move down the sustainable path, do what you can handle. A building that has thoughtfully incorporated a few well-designed sustainable features is far better than one that doesn't. So, as the Rocky Mountain Institute suggests, " Go as green as your time, skills, client and project allow. If your decisions save some lumber, some energy, or even water, you're definitely doing the right thing."

Designing a Green Building

Sustainable development is viewed as a complete package - from the economics and environmental impacts. To site issues and building design, on through to the construction process and operations and maintenance. Sustainable Building Technical Manual - Green Building Design, Construction and Operations, a joint effort by the [U.S. Green Building Council](#), [U.S. Department of Energy](#), and [Public Technology, Inc.](#), is an excellent resource for developers, architects and contractors interested in making a commitment to green and sustainable buildings.

This technical manual provides industry professionals with useable practices spanning the full cycle of a building project. It divides the sustainable building process into specific, organized sections: Economics and Environment, Pre-Design, Site Issues, Building Design, Construction Process, Operations and Maintenance, and Issues and Trends. The manual can be ordered from the [U.S. Green Building Council](#).

Sustainable Future

Each year dozens of new projects are built that demonstrate a commitment to sustainable construction. Each year new energy efficient and healthy technologies and products are added to the market. Each year refined green building standards, codes and regulations such as those from [Green Seal](#) and [Scientific Certification Systems](#) help build momentum to the sustainable movement. New building rating systems, such as the [Leadership in Energy and Environmental Design \(LEED™\)](#), better evaluate a building's environmental and energy performance. Green building products certification programs strengthen the growth of green building practices by making it easier to identify and evaluate options for buildings.

As the builder or designer of a green building, you are likely to find yourself in the position of educating others - contractors, subcontractors, tradespeople and clients - who do not fully understand or appreciate sustainable design. Stay the course. Remember, it wasn't too long ago that single-paned windows and uninsulated walls were the construction technique du jour. Now, builders wouldn't think of constructing a building without at least double-paned windows and fully insulated walls.