

“Demonstrate, Educate and Promote”

Sustainable Building

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Our buildings play such a dominant and longstanding role in our lives that it can be hard to conceive that there is a sea change in our understanding of their impact. Buildings come in a large variety of shapes and functions, and have been adapted throughout history for a wide number of factors, from building materials, engineering technologies, weather conditions, to land prices, ground conditions, specific uses and aesthetic reasons. Now we are establishing their environmental impact as a major concern.

In recent years, interest in **sustainable planning** and building practices has also become part of the design process of many new buildings. We now know that our buildings are the largest single factor to climate change. Green building is a central focus on how we can properly adapt for living in the coming century.

Green building has three major components to be considered: energy, health, and environmental impact. By valuing each of these components in all building projects, we will make a deep and substantial impact for ourselves, our community and our overall environment. Green building is for new buildings, remodels, and retrofits,

Energy usage is trending upwards alarmingly in the built environment. Energy efficient design and construction affects our overall environment, our

comfort and our bottom line. Without energy efficiency considered at each stage of construction and for our existing buildings we face with the consequences of a very unstable energy future.

A healthy building is naturally lit, has good air quality, and is functional and beautiful. Well being is central to green buildings and should not be overlooked. Children are especially venerable, but indoor environmental quality is deeply beneficial for all of us.

The environmental impact of the materials and land in which a building rests helps keep us from further incurring damage by our choices. As we carefully consider resources, develop high quality neighborhoods and cities, and build for durability and beauty the benefits multiply.

So how do you do all of this? In green building it is called integrated design. All aspects of a building are considered and a systems approach is developed. This requires a fundamental shift in how we currently design and build. Current building practice tends to have each participant hand their finished work to the next trade as a project moves from concept to completion. Buildings are complex and thus many issues can be overlooked or ill considered as a result. Our current building process also leads to poor building performance and problems that crop up years down the road that can easily be avoided at the onset of the project.

Integrated design is when all the key players work together towards a common objective. Green building now requires all of the participants to play a role at the conception of the project. This is because no single person has all the answers, even for relatively simple projects. By having good communication between the

owner, consultant, architect, engineer, builder, suppliers, and subs a much more thoughtful and robust building results. This costs little, if anything extra, but the building's performance is greatly enhanced.

So what standards are you building to? Rating systems give both guidance and verification. They are intended to provide a template of best practices. A rating system like LEED™ or Energy Star rewards buildings by encouraging successful strategies and materials that have a quantifiable impact. Codes provide a minimum to build to and are intended to keep buildings safe, not necessarily for them to perform well.

Beyond rating systems though, there is an attitude of high quality design, smart material and equipment choices, good craftsmanship, and a dedication to contributing to a thoughtful and meaningful process that weighs all the issues of a building's impact and performance. This impact is also understood in how the building contributes to the surrounding neighborhood. While not simply a linear progression the basic considerations of green building can be prioritized in seven steps.

1. Siting and Location
2. Energy and Water Efficiency
3. Natural Lighting, Heating, and Cooling
4. Indoor Environmental Quality
5. Recycled and Renewable Materials
6. Solar and Wind Energy
7. Regenerative and Adaptive Technologies

As each one of these aspects is properly related to in the dynamics of the project the next step can be incorporated. This approach goes beyond what we consider green building and engages with the concept of sustainable building and design.

Our current stock of buildings requires revitalization for them to fit into this new way of thinking about a building's role. Consider prioritizing energy efficiency before solar panels for instance. Building science and testing has greatly improved our ability to simultaneously make a home more energy efficient, comfortable, healthier and affordable.

To do this we establish a plan that integrates the insulation, heating and cooling, fresh air, and other functions of the home. When you replace a furnace with a high efficiency model, you also need to consider how the ducting, insulation and thermal envelope work. As you improve the buildings envelope you also improve the comfort. You may be able to forgo AC as an efficient whole house fan may provide adequate comfort. This also means that you can install smaller heating equipment, saving even more money and maintaining the homes temperature more evenly. When the building achieves a certain level of air tightness you can incorporate a heat recovery ventilator or HRV which not only saves energy but can filter the incoming air. Systems like solar hot water and heating, ground source heat pumps, two stage evaporative cooling also require systems thinking and integration to work properly.

Solar electric panels are appropriate when the building has a lowered energy load and a proper roof that is not shaded. Other important technologies and products are also not necessarily green in themselves. They need to be suitable and effective in the overall design of the building.

Be mindful that our buildings are the single largest contributor to climate change and often our immediate and long term well being. Sustainable building is a deep concept of providing the benefits of a high quality built

environment at the same time substantially mitigating our impact. This is a generational approach to building, where the true overall costs and benefits of the built environment are realized.

As an ongoing process, what we do in our buildings and how we relate to them can further enhance our environmental and economic impact. By being aware of our energy and water use, of what we put in our buildings, from couches to cleaners, and how we use our buildings, we maintain a deep connection between our daily lives and the greater world.

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“Because Ecology means Business”