

# Chapter One:

## Overview of Green Building

This section gives an overview of the basic concepts and elements of green building. Contractors can use the Guidelines as a way to describe green building practices and benefits – highlighting the unique expertise and services they can provide to the homeowner. Homeowners can use the Guidelines to gain information on green building options and to define the objectives of their project.

# Introduction

Green building is just applied common sense. To demystify the process and move forward with your construction project, it is helpful to think of green building as the convergence of three fundamental objectives:

- 1 Conserve natural resources**
- 2 Increase energy efficiency**
- 3 Improve indoor air quality**

## Natural Resource Conservation

Conventional building practices consume large quantities of wood, plastic, cardboard, paper, water and other natural resources that lead – unnecessarily – to their depletion.

For example, wood is one of the most common building materials, but is often used wastefully. We have already harvested 95% of the nation’s old-growth forests – a trend that simply cannot continue. Engineered lumber products such as wood I-joists, wood fiber laminates and oriented strand board, utilize fast growing farm trees as an alternative to old-growth forests. These products can use as little as 50% of the wood fiber to perform the same structural functions and are typically stronger, straighter and lighter than solid-sawn lumber.

Remodelers have a rapidly expanding range of green building materials from which to choose. Recycled-content decking, insulation, reclaimed lumber and other products divert waste from landfills, while providing quality and durability that often exceed conventional materials. For example, decking material made out of recycled plastic resins mixed with wood waste fibers can last up to five times longer than wood decks, and never need to be treated or painted.

Water conservation is another important issue. Wise water usage reduces the strain on resources as well as lowers expenses. Today, remodelers can take advantage of a new generation of high-efficiency washers, dishwashers, and landscape water management systems.



### GREEN BUILDING TIP

### CERTIFIED GREEN BUILDING PROFESSIONALS

The San Francisco Bay Area chapter of the National Association of the Remodeling Industry (SFBA NARI), in coordination with the Alameda County Waste Management Authority, offers a comprehensive certification class for California licensed building professionals. The class consists of a four session course on how to apply green building methods and materials in remodeling. Consumers can locate a Certified Green Building Professional at [www.sfbnari.com](http://www.sfbnari.com). Building professionals interested in becoming certified can contact NARI at 415-982-9200 or visit their website at [www.sfbnari.com](http://www.sfbnari.com).

## Energy Efficiency

Energy efficiency is a cornerstone of any green building project. Generation and use of energy are major contributors to air pollution and global climate change. Improving energy efficiency and using renewable energy sources are effective ways to improve air quality and reduce the impacts of global warming.

Improving energy efficiency is also an economically effective choice for consumers. Lowering utility expenses allows residents to enjoy the financial benefits year after year.

The first step to increase energy efficiency is to add insulation and weather stripping wherever possible, install double-glazed/low-E windows and upgrade to high-efficiency appliances. Other energy upgrades/choices include installing solar water heaters, photovoltaic panels, and purchasing “green power” generated from renewable sources like the sun, wind and biomass (when available).

## Indoor Air Quality

The United States Environmental Protection Agency (EPA) reports that the air in new homes can be ten times more polluted than outdoor air. According to the New England Journal of Medicine, 40% of children will develop respiratory disease, in part, due to the chemicals in their homes. Poor indoor air quality is caused by the offgassing of chemicals found in many building materials as well as mold and mildew that build up in homes due to poorly designed and maintained heating and cooling systems.

One of the most common indoor pollutants is formaldehyde, a suspected human carcinogen. Kitchen cabinets, countertops, shelving and furniture are typically made from particleboard held together by formaldehyde-based adhesives. The formaldehyde is released into the home for years after these products have been installed. Many paints and floor finishes also contain unhealthy volatile organic compounds (VOCs). That “new house smell” is actually the odor of these volatile compounds offgassing and is a telltale sign that there are harmful chemicals in the indoor environment.

The building products industry has responded to these indoor pollution problems by developing alternative paint, finish, and adhesive products. For example, solvent-free adhesives used in flooring and countertops can eliminate many of the suspected and known human carcinogens. Paints, varnishes, and cleaners that don’t utilize volatile compounds are now commonly available from most major manufacturers at costs comparable to conventional products.

In addition to the growing number of readily available and cost-effective green materials – an increasing number of builders and remodelers are also using natural building materials such as straw-bale, rammed earth, adobe and cob. While less common in their use, natural building products have a positive impact on the environment as they are renewable and abundant; energy-efficient in production, transport and use; non-polluting; durable and long lasting.



### GREEN BUILDING TIP

### GREEN REMODELERS GUILD

Graduates of the NARI Certified Green Building Professional class have formed a new trade group called the Green Remodelers Guild. Their mission is to provide continuing education in green building practices as well as a forum for discussion of green building materials and methodologies. For more information, visit [www.build-green.org](http://www.build-green.org).

# Benefits of Green Building

There are many reasons to build green. These include a concern for the environment, an interest in building more efficiently, health considerations or a desire to create an environmentally friendly image for your business. By applying a sustainable perspective to design, construction and remodeling, green building brings the benefits of resource conservation, energy savings and healthy living.

Each of the features listed in these Green Building Guidelines benefit the environment by addressing one or more of the following: resource conservation, energy efficiency, indoor air quality.

The following is a list of green building features that convey the benefits of building green:

## Higher Quality, Environmentally Sound Products:

Most green building products and materials were developed to do something better than their conventional counterpart. These products usually perform better and are manufactured in an environmentally sound manner, thus protecting and restoring our natural resources. Consider using the following:

- Recycled-content decking
- FSC Certified wood
- Engineered lumber
- Interior steel studs
- Solvent-free adhesives
- Natural linoleum flooring
- Recycled-content ceramic tile
- Flyash in concrete
- Bamboo flooring

## More Durable/Lower Maintenance Products:

Next to quality, durability and reduced maintenance are very important. There is never enough time to do what needs to be done and home maintenance is never high on the list of how to spend time away from work. Consider using the following:

- Fiber-cement siding
- Recycled-content decking
- Exposed concrete flooring
- Natural linoleum flooring

- Recycled-content ceramic tile
- Resource-efficient landscapes and gardens
- 40 year roofing

## Products and Practices that Provide Greater Comfort and Lower Utility Bills:

Comfort is what drives high energy use. When it gets hot, we turn on the air conditioning. By increasing the insulation and providing for natural cooling, the electricity demand can be reduced with no compromise in occupant comfort. Consider incorporating the following:

- Foundation/slab insulation
- Increased wall and ceiling insulation
- Spray cellulose insulation
- Advanced infiltration reduction practices
- Low-e windows
- Hydronic heating
- All ducts located in conditioned spaces
- Ceiling fans
- Whole house fans
- Passive solar heating
- Natural cooling
- ENERGY STAR® appliances
- Attic ventilation systems

## Healthier Products and Practices For Families

What is more important than the health of our children? The public health community has identified homes as one of the most significant threats to children's health. It is only common sense to reduce the use of products that are known to have health impacts. Consider offering the following:

- Low/No-VOC paints
- Natural linoleum in place of vinyl flooring
- Formaldehyde-free medium density fiberboard (MDF)
- Solvent-free adhesives
- Water-borne wood finishes
- Clean ducts before occupancy
- Exhaust fan in attached garages
- Recycled-content fiberglass insulation with no added formaldehyde
- Seal all particleboard and MDF