

# Chapter Six Green Building

*“Designing, constructing and operating buildings and landscapes to incorporate energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials, and indoor environmental quality in all phases of a building’s life.”*

Green building is a fundamental change in the way buildings are designed and built. Green, or sustainable building, addresses all major aspects of a building’s design, operation, and maintenance. Green building is important because traditional building practices generate a significant amount of waste, both in construction and operation of buildings. Green building technologies apply to all kinds of building and construction projects, ranging from skyscrapers to highways to bathroom remodels. Waste prevention, reuse, recycling, and choice of building materials are important aspects of building or remodeling green. This chapter focuses on residential choices for green building and remodeling.



## 1. Green Building at Home

Green building is all about planning. Planning with an architect and contractor to incorporate green building principles into a project before it starts is perhaps the most important step to take to ensure a project is built green. That way, everyone understands the vision for the project, and the architect can incorporate green design principles into the project from the outset. Hiring architects and contractors that have experience with and interest in green building can enhance your project’s success. Proper planning reduces the need for costly design changes later.

**Waste prevention** - One simple way to prevent waste during construction of a new house or addition is to design the structure to match traditional material lengths. For example, if wallboard comes in 4-foot by 8-foot panels, a design that calls for 8-foot or 16-foot walls will create less waste than one that calls for 6-foot or 10-foot walls. The old saying “measure twice, cut once” is another waste-prevention

strategy. Incorporating energy- and water-efficient appliances and fixtures into a project also prevents waste. Preventing the need for future remodeling by designing flexibility into a space is another form of waste prevention. Repairing, resurfacing, or renewing fixtures and surfaces, instead of buying new ones, can help prevent waste. Another key waste prevention technique is careful construction practice. For example, proper caulking and installation of flashing around roof and window penetrations can help prevent waste caused by water damage.

**Reuse** - In a remodeling project, the simplest way to reuse materials is to reuse some or all of the original materials or fixtures. For example, when remodeling a kitchen, refacing cabinets is a cost-effective and waste-minimizing way to give a kitchen a new look. Many stores in King County sell salvaged building materials such as doors, windows,



Seattle/King County  
“Hiring a Pro” Green  
Home Remodel guide  
available online at  
<http://your.kingcounty.gov/solidwaste/greenbuilding/residential/remodel.asp>.

### Making Connections

*When you build green, you are connecting to other practices important to being an MRC:*

- **waste prevention, reuse, and recycling**
- **using less toxic materials and protecting indoor air quality**
- **choosing materials with longer lifecycles that are more sustainable and materials made from rapidly renewable resources**
- **Composting, practicing natural yard care and using drought-tolerant plants to conserve resources.**



## Chapter Six

# Green Building



light fixtures, cabinets, hardwood flooring and hardware. These materials lend authenticity to a remodel in an older home, or interest and style to any construction project.

Another important benefit of reusing building materials is that it preserves what is referred to as the “embodied energy” of the materials. Embodied energy is the energy consumed by all the processes involved in producing a material, from acquisition of natural resources to product delivery. Reuse of salvage materials help reduce solid and hazardous waste produced in the manufacture of new building materials. The King County Solid Waste Division waste exchange offers a way to find reused and salvaged materials. Visit <http://your.kingcounty.gov/solidwaste/exchange/building.asp>.

### Learn More

*The City of Seattle/ King County's Green Home Remodel series of brochures contains many helpful tips on how to create a green remodeling project. The Green Home Remodel guides are available online at: [www.kingcounty.gov/greentools](http://www.kingcounty.gov/greentools)*

*For more information on preventing and reusing yard waste, see Chapter 4, Natural Yard Care.*

**Deconstruction** - One emerging trend in reuse is “deconstruction.” Traditionally, when a home was razed, a demolition team with heavy equipment tore the house down in a day or two, turning the home into waste, all of which went to the landfill. In recent years, entrepreneurs started deconstructing buildings, carefully dismantling them to selectively save the materials of value. Although deconstruction takes longer than demolition, most of the building materials can be salvaged, reused on site, or sold. One local deconstruction company estimates that its crews can salvage 80 to 95 percent of every building they take apart. The additional time needed to deconstruct a home is sometimes

a barrier to salvage, and stronger markets for salvaged materials would help this fledgling industry. King County's Green Tools has assisted with several deconstruction pilot projects, including the deconstruction of two old warehouses on Harbor Island in Seattle.

**Recycling** materials during new construction or remodeling projects is simpler than recycling demolition wastes. The easiest way to ensure building materials from a project are recycled is to stipulate in the contract that contractors must recycle a specific percentage of materials. A number of private companies in King County recycle building materials, especially asphalt, concrete, brick, porcelain, wood, and gypsum wallboard. The “What Do I Do With?” Web site a list of these recyclers [www.kingcounty.gov/WhatDoIDoWith](http://www.kingcounty.gov/WhatDoIDoWith) . It is important to plan for enough space for separate containers to hold recyclable materials and finding enough space for multiple containers on a city lot can be a challenge. Many processors accept mixed loads of materials for recycling, but this is not always as effective as keeping materials separated from the beginning.

Another way to incorporate recycling into a green building project is to ensure that the room or home includes space for recycling and



*Floor planks salvaged from Harbor Island deconstruction site.*



# Chapter Six Green Building

composting. For example, a green remodeled kitchen might have cabinet or closet space for recycling bins, or even a chute in the countertop leading to a bin for food scraps that eventually will be composted.

**Materials Choice** - a critical component of building green. Generally speaking, green building materials should be sustainably and/or locally produced, minimize the use of toxic components, be durable or easy to repair, and be designed for future reuse and/or recycling. An example of this is choosing a hardwood flooring material over carpet. A whole range of green building materials are now available, from sustainably harvested lumber, to paints with few or no volatile organic compounds (VOCs), to recycled-content carpet. Salvage yards and home centers that specialize in green building products can be found in the phone book and online. The City of Seattle/ King County Green Home Remodel brochure series provides sustainable remodeling information kitchens, baths and laundry areas, roofing, painting, landscape materials, hiring a professional, and salvage and reuse. In fall of 2008 King County's EcoConsumer Program launched a new on line tool to assist homeowners in green remodel projects [www.ecocoolremodel.com](http://www.ecocoolremodel.com)

## Target Materials

As described in Chapter 2, King County has a goal of Zero Waste of Resources by 2030. To achieve this goal, the county has selected six target materials on which to focus its efforts; wood, yard waste, and mercury are most relevant to green building.

- **Wood** is a major component of most building projects, and is also a major part of the waste stream when buildings are demolished. New wood has become so expensive and scarce that the building industry has adopted a number of measures to reduce its use of wood and to reuse and recycle the wood it does use. Reusing beams, hardwood flooring, cabinets, doors, and other salvaged materials reduces the use of new wood. Builders employ various techniques and alternative materials to reduce the use of wood in commercial and residential construction:
  - **Steel** takes the place of wood in many commercial buildings today.
  - **Panelization** in which home frames are built in panels in a factory-like setting, helps reduce wood waste in the construction of large subdivisions. Because these builders construct many homes of the same design,



## Learn More

If you want to know more about green building, check out the following online resources:

- **Built Green™**  
[www.builtgreen.net](http://www.builtgreen.net)
- **U.S. Green Building Council**  
[www.usgbc.org](http://www.usgbc.org)
- **Cascadia Region Green Building Council** [www.cascadiagbc.org/](http://www.cascadiagbc.org/)
- **King County's GreenToolsGreen Building Program**  
[www.greentools.us](http://www.greentools.us)

## Check It out Online

Finding professionals who are trained in green building practices makes the planning process even easier. These organizations offer great resources:

- **Built Green™** [www.builtgreen.net/members.html](http://www.builtgreen.net/members.html)
- **Northwest EcoBuilding Guild** [www.ecobuilding.org](http://www.ecobuilding.org)
- **U.S. Green Building Council, Cascadia Chapter** [www.cascadiagbc.org](http://www.cascadiagbc.org)
- **American Institute of Architects** [www.aiaseattle.org](http://www.aiaseattle.org)
- **LEED® standards** [www.kingcounty.gov/solidwaste/greenbuilding/commercial/leed-tool.asp](http://www.kingcounty.gov/solidwaste/greenbuilding/commercial/leed-tool.asp)
- **King County commercial case studies** [www.kingcounty.gov/solidwaste/greenbuilding/program/casestudies.asp](http://www.kingcounty.gov/solidwaste/greenbuilding/program/casestudies.asp)
- **Seattle green building program** [www.seattle.gov/environment/building.htm](http://www.seattle.gov/environment/building.htm)



the precise measurements are known, and less wood is wasted.

- **Plastic** or composite lumber provides a durable alternative to wood for decks or patio furniture.
- **Cork** produces attractive and durable flooring, and the fast-growing bark is a rapidly renewable resource.

While **yard waste** is not a direct part of a building project, preserving existing native vegetation during clearing and grading activities is a key component of green building practices. The county's Critical Areas Ordinance adopted in 2004 promotes the use of compost as a way to prevent site disturbance and erosion during development. King County offers a native plant salvage program that works with developers and other agencies to locate potential salvage sites, organizes volunteers to remove plants just prior to construction, and replants the salvaged plants at salmon habitat restoration projects. Creating natural yard care site designs that minimize the future production of yard waste are also important to green building. Selecting drought-tolerant plants and planting them in the right sites, grasscycling, and composting are all ways to manage yard waste.

There are over 13,000 Built Green™ certified homes in King and Snohomish Counties with 650 member companies. The Built Green™ program maintains a list of builders, developers, remodelers, architects, landscape designers, interior designers, realtors, lenders, and others who have joined the program on their website [www.builtgreen.net](http://www.builtgreen.net).

## 2. Green Building Certification Programs

Several standards are in use in King County that evaluate the environmental benefits of green buildings. Leadership in Energy and Environmental Design (**LEED**®) is a set of national standards developed by the US Green Building Council, for both commercial and residential projects. A pilot for neighborhood design is also in the pilot phase and being tested now. Built Green™, a rating system developed for new construction by the Master Builders Association of King and Snohomish Counties, is for residential buildings.

The U.S. Green Building Council describes its **LEED**® standard, as “a voluntary, consensus-based national standard for developing high performance, sustainable buildings.” Different versions of LEED® exist for new commercial construction and major renovation, existing buildings, core and shell, commercial interiors, and homes. Each version contains a checklist of credits that a building project can obtain in the following categories: sustainable sites, indoor environmental quality, energy and atmosphere, water efficiency, innovation and design process, and materials and resources. Projects must achieve a certain number of credits to be certified at a particular level: Certified, Silver, Gold, or Platinum.

In June 2007, GreenWorks Realty, Built Green™ of King and Snohomish Counties, Northwest Energy Star® Homes, Cascadia Region Green Building Council and other industry leaders worked with the Northwest Multiple Listing Service (NWMLS) to introduce environmentally-certified (ECert) homes into its search categories. The NWMLS largest Multiple Listing Service in the country to include green criteria.

In King County these homes sell in up to 18 percent less time and for 28-37 percent higher value per square foot. ECert homes are built to a higher standard than local building codes require and offer a variety of potential benefits including increased energy efficiency, water conservation, improved indoor air quality, environmentally-preferable materials, and reduced construction waste. For more information see the ECert report at [http://greenworksrealty.com/e-cert\\_report/e-cert\\_report.php?t=e-cert\\_report](http://greenworksrealty.com/e-cert_report/e-cert_report.php?t=e-cert_report).



## Chapter Six

# Green Building



### Check It Out In Person

Many public buildings in King County are built to Built Green™ or LEED™ standards:

- Issaquah Highlands Community Center (Built Green™)
- King Street Center (Pioneer Square)
- Kent Pullen Regional Communications and Emergency Coordination Center (Renton)
- Cedar River Watershed Education Center (Rattlesnake Lake)
- Redmond City Hall
- Shoreline Recycling and Transfer Station
- Chinook Building (King County office in downtown Seattle)
- Sammamish City Hall
- Mercer Slough Environmental Education Center (Bellevue)

Several green buildings in Seattle are built to LEED® standards and open to the public:

- Carkeek Park Environmental Learning Center
- High Point Community Center (West Seattle)
- McCaw Performance Hall (Seattle Center)
- Seattle Central Library (downtown Seattle)
- Seattle Justice Center (downtown Seattle)
- Northgate Community Center (north Seattle)
- Yesler Community Center (downtown Seattle)

The LEED® standards have helped to define green building and have set a benchmark for green building practices nationwide. States and local governments around the country provide incentives for buildings designed to LEED® standards. King County's 2008 Green Building Ordinance 16147 mandates LEED® Gold for King County capital projects that are of the size and scope to attain a LEED rating. The City of Seattle promotes a policy that all city buildings over 5,000 square feet are built at least to the LEED® Silver standard.

Currently the leading program for residential use in King County is Built Green™, the local Master Builders Association and the governments of King and Snohomish counties teamed up to develop the **Built Green™** program, which provides a similar self-certification process for new and remodeled homes, multifamily residences, and communities. The program provides builders, developers and consumers with easy-to-understand rating systems that quantify environmentally preferable building practices

### Learn More

For a step-by-step guide for identifying and improving your home's energy efficiency, visit <http://www.kingcounty.gov/solidwaste/greenbuilding/documents/EnergyGuide.pdf>

For more information about other resource conservation gains through energy and water savings, check out the following online resources:

- Puget Sound Energy [www.pse.com](http://www.pse.com)
- Saving Water Partnership [www.savingwater.org](http://www.savingwater.org).

For water conservation tips in King County cities outside of Seattle, check your city's website.

## Chapter Six

# Green Building



for the remodeling or construction of homes, multi-family units, and community developments. Based on the green building scores received, a home is classified as a one-, two-, three-, four- or five-star Built Green™ project.

The Built Green checklist contains a variety of credits in six categories, although the categories are slightly different:

- green building codes
- site and water protection
- energy efficiency
- health and air quality
- materials efficiency
- environmentally responsible home ownership.

The Materials Efficiency credits relate most closely to waste prevention, reuse, and recycling. For example, a remodeling project can gain credits for the following activities:

- reusing building materials
- selling or giving away wood scraps
- installing locally produced materials
- using fly ash in concrete for new foundation
- using recycled-content carpet
- using salvaged brick or masonry for exterior.

*In 2007, in King County (excluding Seattle), 1.5 million tons of construction and demolition debris were generated annually, and an estimated 82 percent of the materials were diverted for reuse, recycling, or energy generation.*

### Learn More

*The City of Seattle/King County's Green Home Remodel series of brochures contains many helpful tips on how to create a green remodeling project. The Green Home Remodel guides are available online at [www.kingcounty.gov/solidwaste/greenbuilding/residential/remodel.asp](http://www.kingcounty.gov/solidwaste/greenbuilding/residential/remodel.asp).*

*For more information on preventing and reusing yard waste, see Chapter 4, Natural Yard Care.*

