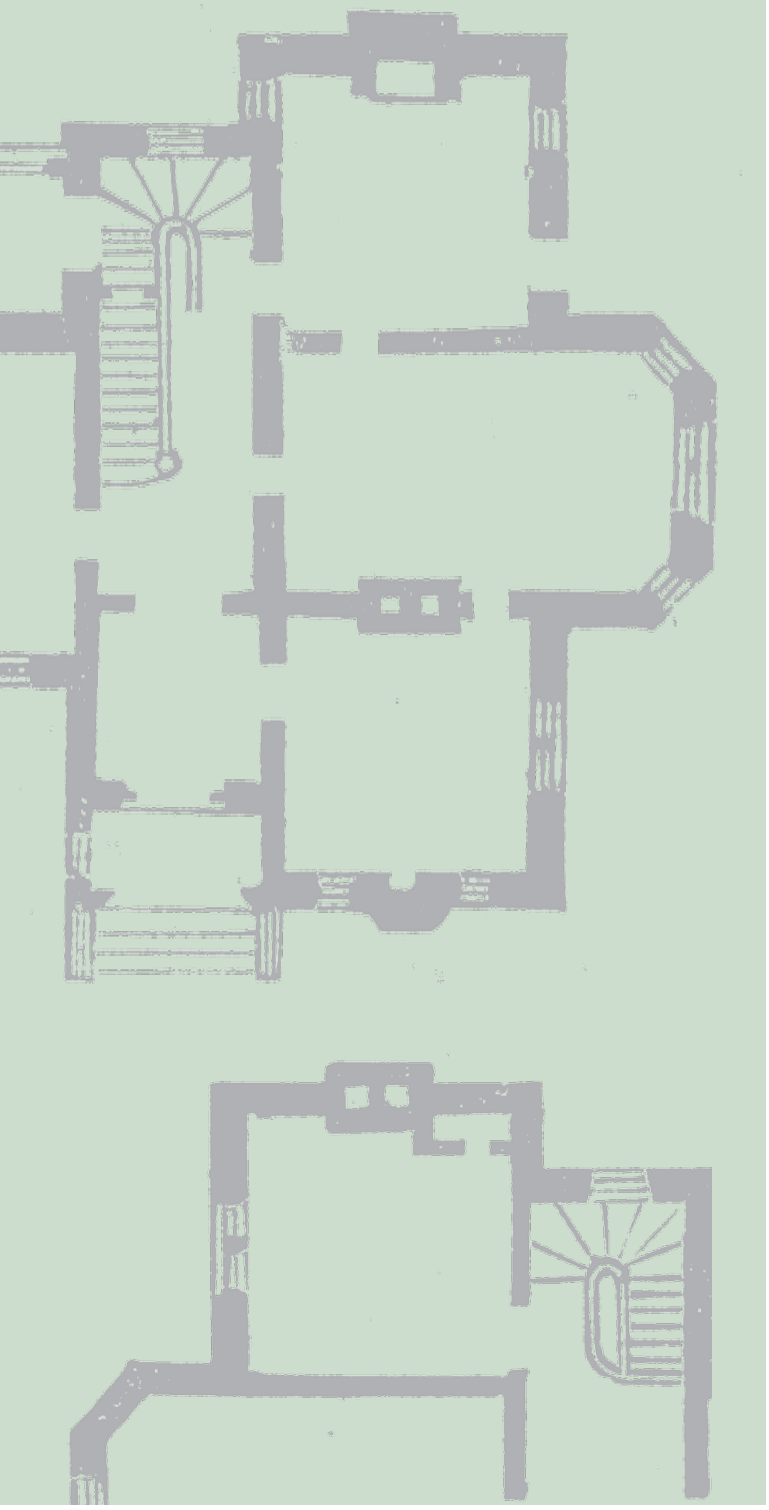
CHECKLIST FOR ENVIRONMENTALLY RESPONSIBLE DESIGN AND CONSTRUCTION



Why Green?

Being green is about the environment. It also makes the office a healthy place to work. It saves money. Best of all, it's easy to start.

Being green has many benefits

- It improves the quality of life, not just for employees, but everyone in the local and global community.
- It can make things more aesthetically pleasing.
- It's something to be proud of.
- It makes an office more productive.
- It helps sustain life on this planet and conserves resources for future generations.

Being green is the future of the planet — now we have the opportunity to lead the way.

The NonprofitCenters Network

The suggestions in this guide can help you achieve LEED (Leadership in Energy and Environmental Design) green building certification for your building or office remodel. LEED will help guide your design process, saving you time while educating you on LEED's standard for developing sustainable and high-performance buildings. To learn more about LEED, go to the U.S. Green Building Council's website at www.usgbc.org <http://www.usgbc.org/

GENERAL DESIGN CONSIDERATIONS

SMALLER IS BETTER

- Optimize use of interior space through careful design so that the overall building size, and resource use in constructing and operating it, are kept to a minimum.

DESIGN AN ENERGY EFFICIENT BUILDING

- Use high levels of insulation, high performance windows and tight construction.

DESIGN BUILDINGS TO USE RENEWABLE ENERGY

- Incorporate passive solar heating, daylighting and natural cooling. Use solar water heating, especially for swimming pools, or design buildings for future solar installations.

INSURE CONSISTENT, SAFE AND HEALTHY INDOOR AIR QUALITY

- Avoid potential health hazards such as pesticides, mold, radon and formaldehyde.
- Provide detailing that will avoid moisture problems, which could cause mold and mildew growth.
- Use insect-resistant detailing that will require minimum use of pesticides.
- Use natural pest controls, such as native plants and flora that will encourage the habitation of natural predators.
- Choose construction materials that will not emit harmful air pollutants.
- Insure proper ventilation of indoor air pollutants such as tobacco smoke and carbon monoxide.

DESIGN WATER-EFFICIENT, LOW-MAINTENANCE LANDSCAPING

- Conventional lawns have a high environmental impact because of water use, pesticide use and pollution generated from mowing.
- Landscape with drought-resistant native plants and perennial ground covers. This reduces costs for maintenance by saving chemical products, labor, fuel and water.

MAKE IT EASY FOR OCCUPANTS TO RECYCLE

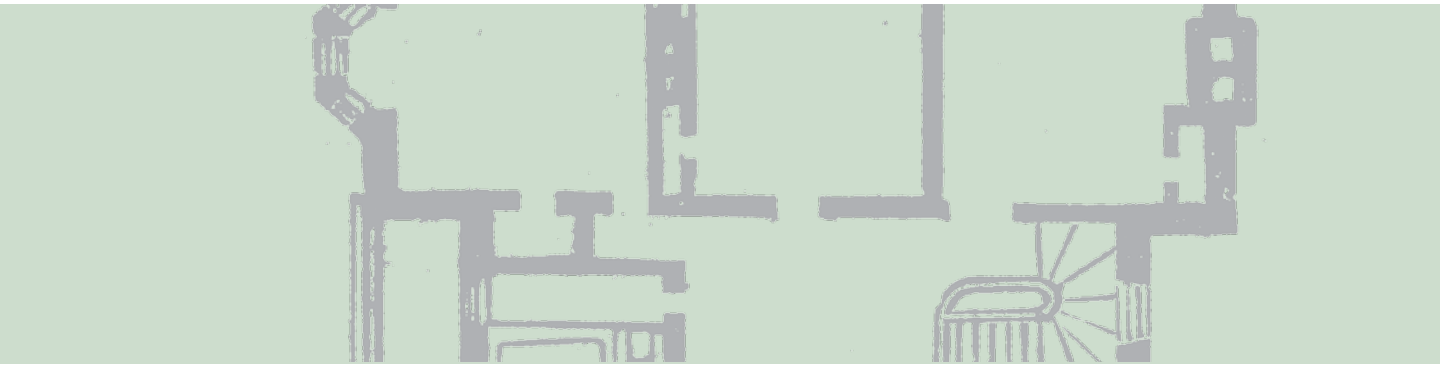
- Provide recycling bins near kitchens and under-sink compost receptacles.
- Provide for convenient pickup locations for waste removal service.

LOOK INTO THE FEASIBILITY OF GRAYWATER

- Recycle water from sinks, showers, washing machines (graywater) for irrigation in some areas. If current codes prevent graywater recycling, consider designing plumbing for easy future adaptation.

DESIGN FOR DURABILITY

- Minimize the environmental impact of buildings over time. A building with a durable style, or "timeless architecture," will be more likely to realize a long life.



CHOOSE LOW-MAINTENANCE BUILDING MATERIALS

- Select building materials that require little maintenance or whose maintenance have minimal environmental impact.

BUY LOCALLY PRODUCED BUILDING MATERIALS

- Seek locally produced materials. Transporting goods consumes energy and pollutes the environment.

USE BUILDING MATERIALS MADE FROM RECYCLED MATERIALS

- This reduces solid waste problems, cuts energy consumption in manufacturing, and saves on natural resource use.

USE SALVAGED BUILDING MATERIALS

- Reduce landfill pressure and save natural resources by using salvaged materials: (e.g. lumber, millwork, certain plumbing fixtures and hardware). Make sure these materials are safe (test for lead paint and asbestos), and don't sacrifice energy or water efficiency by reusing old windows or toilets.

AVOID MATERIALS THAT WILL OFF GAS (EMIT POLLUTANTS)

- Avoid solvent-based finishes, adhesives, carpeting and particle board. These products release formaldehyde and volatile organic compounds (VOCs) into the air affecting workers' and occupants' health as well as contributing to smog and ground-level ozone pollution outside buildings.

SEEK RESPONSIBLE WOOD SUPPLIES

- Use lumber from independently certified, well-managed forests. Avoid lumber products produced from old-growth timber. Engineered wood can be substituted for old-growth Douglas fir, for example.

MINIMIZE USE OF PRESSURE-TREATED LUMBER

- Use detailing that will prevent soil contact and rot. Where possible, use alternatives such as recycled plastic lumber.
- Take measures to protect workers when cutting and handling pressure-treated wood. Scraps should never be incinerated.

MINIMIZE PACKAGING WASTE

- Avoid excessive packaging, such as plastic wrapped plumbing fixtures or fasteners that aren't available in bulk.
- Tell your supplier why you are avoiding over-packaged products. Keep in mind that some products must be carefully wrapped to prevent damage and resulting waste.

EQUIPMENT

INSTALL HIGH EFFICIENCY HEATING AND COOLING EQUIPMENT

- Well-designed high efficiency furnaces, boilers and air conditioners and their distribution systems not only save building occupants money but also produce less pollution during operation.

INSTALL HIGH EFFICIENCY LIGHTS AND APPLIANCES

- Use fluorescent lighting. It has improved dramatically in recent years and is now suitable even for homes.
- High efficiency appliances offer both economic and environmental advantages over conventional counterparts.
- Install automated lighting, computers, appliances, and heating and cooling fans programmed to shut off when not needed.

Although most people don't know it, buildings have a large impact on the environment. Buildings contribute to nearly 18% of CO^2 emissions in the U.S., use about 40% of energy produced and 94% of this energy comes from non-renewable, high pollution sources.

SITING AND LAND USE

RENOVATE OLDER BUILDINGS

- Consider renovating existing buildings over demolition and new construction.

CREATE COMMUNITY

- Create cohesive and diverse communities when planning a development.

ENCOURAGE IN-FILL AND MIXED-USE DEVELOPMENT

- Avoid building on undeveloped (greenfield) sites. Mixed-use development, in which residential and commercial uses are intermingled, can reduce automobile use.

MINIMIZE AUTOMOBILE DEPENDENCE

- Select building locations that provide access to public transportation, bicycle paths and walking access to basic services.
- Consider encouraging bicycle commuting by providing bike storage, locker rooms and showers.

VALUE SITE RESOURCES

- Carry out a careful site evaluation: consider solar access, soils, vegetation, water/resources, tree preservation and let this information guide the design.

LOCATE BUILDINGS TO MINIMIZE ENVIRONMENTAL IMPACT

- Cluster buildings or build attached units to preserve open space and wildlife habitats; avoid sensitive areas, including wetlands
- Leave the most pristine areas untouched, and look for areas that have been previously damaged to build on.
- Seek to restore damaged ecosystems.

PROVIDE RESPONSIBLE ON-SITE WATER MANAGEMENT

- Design landscapes to absorb rainwater runoff (stormwater) rather than having to carry it off-site in storm sewers.
- Consider roof gardens and rain gardens.
- Consider water catchment systems for collecting rainwater and using it for landscape irrigation.
- Look into using permeable materials for walkways, patios, driveways, and parking lots. Permeable materials such as brick pavers, flagstones or porous paving can reduce drainage costs, help with flood control and save trees.

SITUATE BUILDINGS TO BENEFIT FROM VEGETATION

- Reduce cooling loads on buildings by planting hedgerows and shrubbery.

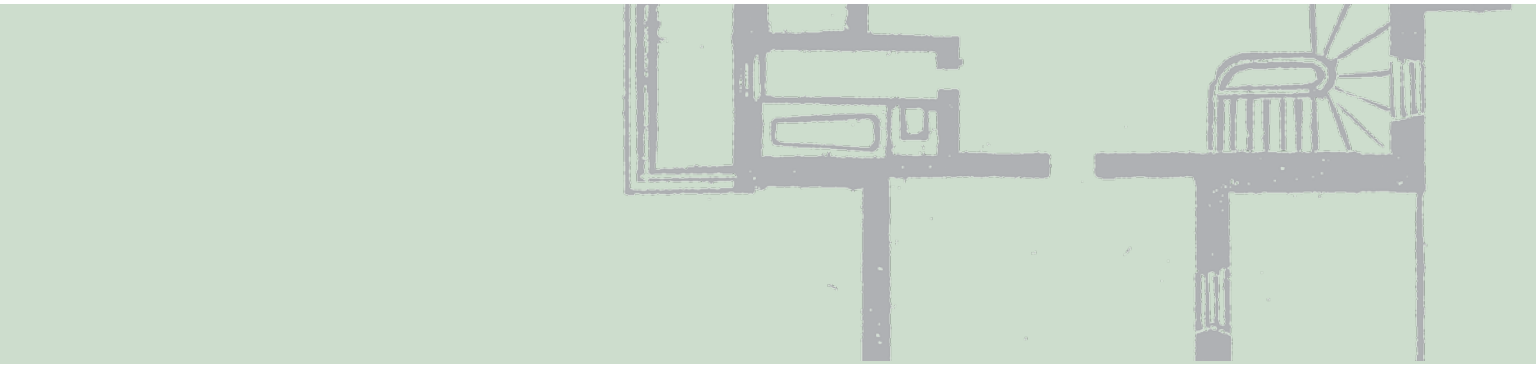
MATERIALS

AVOID OZONE-DEPLETING CHEMICALS IN MECHANICAL EQUIPMENT

- CFCs (chlorofluorocarbons — pollutants that rise into the atmosphere and destroy the ozone layer) have been phased out, but their replacements, hydrochlorofluorocarbons, also damage the ozone layer and should be avoided where possible. Federal law requires reclaiming CFCs when servicing or disposing of equipment.
- Avoid foam insulation made from HCFCs.

USE DURABLE PRODUCTS AND MATERIALS

- Purchase durable products, as they contribute less to our solid waste problems.



DESIGN FOR FUTURE REUSE AND ADAPTABILITY

- Adapt the structure for other uses and choose materials and components that can be reused or recycled.

INSTALL WATER-EFFICIENT EQUIPMENT

- Use water-conserving toilets, appliances, showerheads and faucet aerators to not only reduce water use but to also reduce demand on sewage treatment plants. Reducing hot water use saves energy.

INSTALL MECHANICAL VENTILATION EQUIPMENT

- Consider using heat recovery ventilators in cold climates.

JOB SITE AND BUSINESS

PROTECT TREES & TOPSOIL DURING SITEWORK

- Protect trees from damage during construction by fencing off the "drip line" around them.
- Minimize disturbance to topsoil and avoid major changes to surface grade.

AVOID USE OF PESTICIDES AND OTHER CHEMICALS THAT MAY LEACH INTO THE GROUNDWATER

- Look for less toxic treatments for termites and other insects, and keep exposed frost walls free from obstructions to discourage insects.
- Do not bury construction debris.

MAKE BUSINESS OPERATIONS AND HOMES MORE ENVIRONMENTALLY RESPONSIBLE

- Purchase energy-efficient vehicles, arrange carpools to job sites, and schedule site visits and errands to minimize unnecessary driving.
- Purchase recycled paper and supplies, recycle office paper, and use coffee mugs instead of disposable cups.
- Recycle beverage containers.

MINIMIZE JOB-SITE WASTE

- Centralize cutting operations to reduce waste and simplify sorting. Set up clearly marked bins for different materials that can be taken for recycling (wood scraps for kindling, sawdust for compost).
- Educate construction crews about recycling procedures.
- Donate salvaged materials to low-income housing projects, theater groups or similar places.

MAKE EDUCATION A PART OF YOUR DAILY PRACTICE

- Use the design and construction process to educate clients, employees, subcontractors and the general public about environmental impacts of buildings and how these impacts can be minimized.

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It makes the office a healthy place to work. It saves money. It's easy to start.

FURTHER RESOURCES

LOCAL GOVERNMENT PROGRAMS

City of Austin, Green Building Program
www.ci.austin.tx.us/greenbuilder

King County, WA Construction/Sustainable Building Program
dnr.metrokc.gov/topics/sustainable-building

City of Seattle, Sustainable Building Program
www.seattle.gov/sustainablebuilding

City of Scottsdale, Green Building Program
www.ci.scottsdale.az.us/greenbuilding

Homebuilders Association of Denver, Build Green Program
www.builtgreen.org

GREEN BUILDING GUIDELINES

University of Minnesota, College of Architecture and Landscape Architecture, Minnesota Sustainable Design Guide
www.sustainabledesignguide.umn.edu/default

New York City, High Performance Building Guidelines
www.nyc.gov/buildnyc/ddcgreen

U.S. Green Building Council
www.usgbc.org

Certified Forest Products Council
www.certifiedwood.org

Energy Efficient Building Association
www.eeba.org

GENERAL RESOURCES

California Integrated Waste Management Board, Green Building Basics
www.ciwmb.ca.gov

Portland Office of Sustainability, Green Building Links
www.sustainableportland.org

San Francisco Department of the Environment
www.sfenvironment.com

Excess Access
www.excessaccess.com

SOURCES

HIGHLAND PARK GUIDE
Buildings and the Environment: a Statistical Study (EPA)

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