

# Environmental Building News'

## Checklist for Environmentally Responsible Design & Construction

### DESIGN

- **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. In southern climates, choose glazings with low solar heat gain.
- **Design buildings to use renewable energy:** Passive solar heating, daylighting, and natural cooling can be incorporated cost-effectively into most buildings. Also consider solar water heating and photovoltaics—or design buildings for future solar installations.
- **Optimize material use:** Minimize waste by designing for standard ceiling heights and building dimensions. Avoid waste from structural over-design (use optimum-value engineering / advanced framing). Simplify building geometry.
- **Design water-efficient, low-maintenance landscaping:** Conventional lawns have a high impact because of water use, pesticide use, and pollution generated from mowing. Landscape with drought-resistant native plants and perennial groundcovers.
- **Make it easy for occupants to recycle waste:** Make provisions for storage and processing of recyclables—recycling bins near the kitchen, undersink compost receptacles, and the like.
- **Look into the feasibility of graywater:** Water from sinks, showers, or clothes washers (graywater) can be recycled for irrigation in some areas. If current codes prevent graywater recycling, consider designing the plumbing for easy future adaptation.
- **Design for durability:** To spread the environmental impacts of building over as long a period as possible, the structure must be durable. A building with a durable style (“timeless architecture”) will be more likely to realize a long life.
- **Design for future reuse and adaptability:** Make the structure adaptable to other uses, and choose materials and components that can be reused or recycled.
- **Avoid potential health hazards—radon, mold, pesticides:** Follow recommended practices to minimize radon entry into the building and provide for future mitigation if necessary. Provide detailing to avoid moisture problems, which could cause mold and mildew growth. Design insect-resistant detailing to minimize pesticide use.

### LAND USE & SITE ISSUES

- **Renovate older buildings:** Conscientiously renovating existing buildings is the most sustainable construction.
- **Create community:** Development patterns can either inhibit or contribute to the establishment of strong communities and neighborhoods. Creation of cohesive communities should be a high priority.
- **Encourage in-fill and mixed-use development:** In-fill development that increases density is inherently better than building on undeveloped (greenfield) sites. Mixed-use development, in which residential and commercial uses are intermingled, can reduce automobile use and help to create healthy communities.
- **Minimize automobile dependence:** Locate buildings to provide access to public transportation, bicycle paths, and walking access to basic services. Commuting can also be reduced by working at home—consider home office needs with layout and wiring.
- **Value site resources:** Early in the siting process carry out a careful site evaluation: solar access, soils, vegetation, water resources, important natural areas, etc., and let this information guide the design.
- **Locate buildings to minimize impact:** Cluster buildings to preserve open space and wildlife corridors. Avoid especially sensitive areas including wetlands, and keep roads and service lines short. Leave the most pristine areas untouched, and build on areas that have been previously degraded. Seek to restore damaged ecosystems.
- **Provide responsible on-site water management:** Design landscapes to absorb stormwater instead of putting in storm sewers to carry it off-site. Consider rooftop water catchment systems so that rainwater can be used for potable needs and landscape irrigation.
- **Situate buildings to benefit from existing vegetation:** Trees on the east and west sides of a building can dramatically reduce cooling loads. Hedge rows and shrubbery can block cold winter winds or help channel cool summer breezes into buildings.
- **Protect trees and topsoil during sitework:** Protect trees from construction damage by fencing off the “drip line” around them and avoiding major changes to surface grade.
- **Avoid use of pesticides and other chemicals that may leach into the groundwater:** Look into less toxic termite treatments, and keep exposed frost walls free from obstructions to discourage insects. When backfilling a foundation or grading around a house, do not bury any construction debris.

## MATERIALS

- **Use durable products and materials:** Because manufacturing is very energy-intensive, a product that lasts longer or requires less maintenance usually saves energy. Durable products also contribute less to our solid waste problems.
- **Choose low-maintenance building materials:** Where possible, select building materials that require little maintenance (painting, retreatment, waterproofing, etc.), or whose maintenance will have minimal environmental impact.
- **Choose building materials with low embodied energy:** Heavily processed or manufactured products and materials are usually more energy intensive. As long as durability and performance will not be sacrificed, choose low-embodied-energy materials.
- **Buy locally produced building materials:** Transportation is costly in both energy use and pollution generation. Look for locally produced materials. Local hardwoods, for example, are preferable to tropical woods.
- **Use building products made from recycled materials:** Building products made from recycled materials reduce solid waste problems, cut energy consumption in manufacturing, and save on natural resource use. A few examples of materials with recycled content are cellulose insulation, Homasote®, Thermo-ply®, floor tile made from ground glass, and recycled plastic lumber.
- **Use salvaged building materials when possible:** Reduce landfill pressure and save natural resources by using salvaged materials: lumber, millwork, certain plumbing fixtures, and hardware, for example. Make sure these materials are safe (test for lead paint and asbestos), and don't sacrifice energy efficiency or water efficiency by reusing old windows or toilets.
- **Seek responsible wood supplies:** Use lumber from independently certified well-managed forests. Avoid lumber products produced from old-growth timber unless they are certified. Engineered wood can be substituted for old-growth Douglas fir, for example. Don't buy tropical hardwoods unless the seller can document that the wood comes from well-managed forests.
- **Avoid materials that will offgas pollutants:** Solvent-based finishes, adhesives, carpeting, particleboard, and many other building products release formaldehyde and volatile organic compounds (VOCs) into the air; these chemicals can affect workers' and occupants' health as well as contribute to smog and ground-level ozone pollution outside. Avoid materials that offgas HCFCs, such as extruded polystyrene and polyisocyanurate foam insulation.
- **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 unavailable in bulk. Tell suppliers why you are avoiding over-packaged products. (Some products must be carefully packaged to prevent damage—and resulting waste.)

## EQUIPMENT

- **Install high-efficiency heating and cooling equipment:** Well-designed high-efficiency furnaces, boilers, and air conditioners (and distribution systems) not only save building occupants money, but also produce less pollution. Install equipment with minimal risk of combustion gas spillage, such as sealed-combustion appliances.
- **Avoid ozone-depleting chemicals in mechanical equipment and insulation:** CFCs have been phased out, but their primary replacements—HCFCs—also damage the ozone layer and should be avoided where possible. Reclaim CFCs when servicing or disposing of equipment.
- **Install high-efficiency lights and appliances:** Fluorescent lighting has improved dramatically in recent years and is now suitable for homes. High-efficiency appliances offer both economic and environmental advantages over their conventional counterparts.
- **Install water-efficient equipment:** Water-conserving toilets, showerheads, and faucet aerators reduce water use as well as the demand on septic systems or sewage treatment plants. Reducing hot water use also saves energy.
- **Install mechanical ventilation equipment:** Mechanical ventilation is usually required to ensure healthy indoor air. Heat recovery ventilators should be considered in cold climates for energy savings, but simpler, less expensive exhaust-only ventilation systems are also adequate.

## BUSINESS PRACTICES

- **Minimize job-site waste:** Centralize cutting operations to reduce waste and simplify sorting. Set up clearly marked bins for different types of usable waste (wood scraps for kindling, sawdust for compost, etc.). Find out where various materials can be taken for recycling, and educate your crew about recycling procedures. Donate salvaged materials to low-income housing projects, theater groups, etc.
- **Make your business operations more environmentally responsible:** Plan transportation to be as efficient as possible—purchase energy-efficient vehicles, arrange carpools to job sites, and schedule site visits and errands to minimize driving. In your office, purchase recycled paper and supplies, recycle office paper, use mugs instead of disposable cups. On the job, recycle beverage containers.
- **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.

- Environmental Building News
- BuildingGreen Suite™
- GreenSpec® Directory
- Green Building Products

BuildingGreen is committed to providing accurate, unbiased, and timely information to help building professionals improve the environmental performance of buildings and surrounding landscapes. We offer both print and electronic resources to help you design and construct buildings using an integrated, whole-systems approach that minimizes environmental impact and maximizes economic performance.



**Environmental Building News** is a monthly newsletter featuring comprehensive, practical information on a wide range of topics related to sustainable building—from energy efficiency and recycled-content materials to land-use planning and indoor air quality. *EBN* is independently published and carries no advertising or sponsorships—its objectivity has earned the respect of environmental activists and industry groups alike. *EBN* is available in print format or electronically with a subscription to our *BuildingGreen Suite* of online tools.

*“Environmental Building News is the best source of unbiased information on green building that I know of. I recommend it, without reservation, to anybody interested in high performance and environmentally appropriate design!” — Bryna Dunn, Researcher, AICP*

### ENVIRONMENTAL BUILDING NEWS

- \$99 - One Year (12 issues)
- \$169 - Two Years (24 issues)
- \$30 - per year rate for *BuildingGreen Suite*™ subscribers

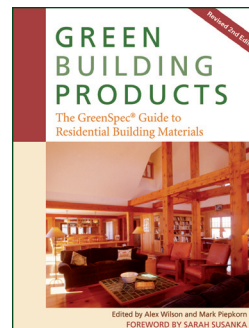


**GreenSpec® Directory** includes nearly 2,000 listings for green building products that have been carefully screened by the editors of *Environmental Building News* and organized according to the 16-division CSI MasterFormat™ system. Directory listings cover more than 250 categories—from access flooring to zero-VOC paints. Included are product descriptions,

environmental characteristics and considerations, and manufacturer contact information with Internet addresses. Also included are guideline specifications that provide additional information on selecting and using environmentally preferable products.

### GREENSPEC DIRECTORY, 6TH ED.

- 450 pages, soft cover, \$89 each (+ S&H)
- \$30 each (+ S&H) for active subscribers to *BuildingGreen Suite*™



**Green Building Products** is the *GreenSpec* guide to residential building materials. It's easy to find the information you need, with nearly 1,600 descriptive listings for products from ag-fiber panels to zero-VOC paints. All phases of residential construction

are covered, from sitework to flooring to renewable energy. Products are organized by building component, and each chapter begins with a discussion of key environmental considerations and what to look for in a green product.

### GREEN BUILDING PRODUCTS, 2ND ED.

- 352 pages, soft cover, \$34.95 each (+ S&H)

*“GreenSpec is the best resource in my collection of sustainable product guides, and I refer to it frequently for my own projects and when providing recommendations to others.”*

*—Grant Crosby, Historical Architect, AIA, LEED AP*

To order, mail the attached order form, visit [www.BuildingGreen.com](http://www.BuildingGreen.com), or call toll-free: 800/861-0954

Outside the U.S. & Canada: Call 802-257-7300 or Fax 802-257-7304 • E-mail: [info@BuildingGreen.com](mailto:info@BuildingGreen.com)


*Please see other side for information on more green building resources.*

**BuildingGreen.com** Search for:

articles | GreenSpec | case studies | reference | calendar | [store](#)

**Winston Series CPC Collector**

The Winston Series CPC Collector from Solargenix Energy is a residential and commercial solar water-heating system. The basic system is comprised of 12 small compound parabolic collectors (CPC) which focus light onto absorber tubes through which heat-transfer fluid is piped. One to three collectors are commonly used for residential solar water-heating systems, depending on the size of the hot water storage tank. A roof-integrated thermosiphoning configuration is possible with new construction. The collectors carry a 10-year warranty. The system's heat exchanger, SOLPAC, is also available as a separate item. Coupled with one or more solar collectors, it prepackages the components needed to convert existing electric or gas water heaters into solar water-heating systems.



**Contact information**  
Solargenix Energy, LLC  
2101-115 Westinghouse Blvd.  
Raleigh, NC 27604  
Phone: 919-871-0423  
Fax: 919-871-0702  
www.solargenix.com

**What makes this product green:**

- Renewable energy and fuel cells

**LEED Credits:**

- EA Prerequisite 2 - Minimum Energy Performance
- EA Credit 1 - Optimize Energy Performance
- EA Credit 2 - Renewable Energy

**Links to manufacturer Web site**

- General Information

**Articles Related to this Product**

- BuildingGreen Announces 2004 Top-10 Products - EBN Awards & Competitions - December 2004
- Solargenix Energy Offers Leading-Edge Solar-Thermal Technology - EBN Product Review - May 2004

**Good design starts with good information.** Successful projects demand smart designers and effective tools. Why do it alone? **BuildingGreen Suite™** provides fast online access to extensive information on sustainable building, integrating hundreds of articles on green building—in-depth features, product reviews, news, and opinion—with the *GreenSpec* product directory and a high-performance building case study database. Taking full advantage of the power of the Internet, each article, product listing, and case study includes links to related content in *BuildingGreen Suite* and other sources of further information. It's all backed by a powerful search engine that makes it a snap to pinpoint the information you need. Twice each month, subscribers are e-mailed an executive summary of products, case studies, and articles added to *BuildingGreen Suite*.

### At BuildingGreen, we believe that:

- Energy-efficient, healthy, environmentally sound commercial and residential buildings are not only possible but also practical and cost-effective.
- Every new construction and renovation project should maximize its value to the owner, occupants, neighbors, and the entire global community.
- Reliable, objective information is essential for making good decisions throughout the process of designing, constructing, and occupying buildings.
- Our customers expect and deserve comprehensive research, honest reporting, well-organized information, outstanding value, and excellent service.

**The quality of our products speaks for itself.  
Please give them a try.**

*"... an excellent resource for green building product research and a helpful tool for finding environmentally responsible materials."*

—Lynn M. Foreschle, Environmental Architect, AIA

### BUILDINGGREEN SUITE ON-LINE SUBSCRIPTION:

One Year: **\$199** per user\*

Try It! **\$12.95** one-week unlimited access

\*Networked and multi-user rates are also available.

For details, contact Jim Newman (Jim@BuildingGreen.com).

### **BONUS!**

Subscribers to *BuildingGreen Suite™* also get significant savings on print versions of *GreenSpec® Directory* and *Environmental Building News*.

*Environmental Building News*: **\$30/year** (Saves you \$69!)

*GreenSpec® Directory*: **\$30** (Saves you \$59!)

**To order, mail the form below, visit [www.BuildingGreen.com](http://www.BuildingGreen.com), or call us toll-free: 800/861-0954.**

BUILDING  GREEN

**YES**, send me the green building resources indicated.

Check or money order in US funds is enclosed.

Charge my:  MC  VISA  AmEx

Card #: \_\_\_\_\_ Exp: \_\_\_\_\_

Name on Card: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Country: \_\_\_\_\_ Daytime Phone: \_\_\_\_\_ Ext. \_\_\_\_\_

E-mail: \_\_\_\_\_

### ORDER FORM

Item	Qty	Unit Price	TOTAL
<b>SUBSCRIPTION ITEM</b>			
<b>BuildingGreen Suite™ online 1-year</b>			
Single or First User		\$199.00	
One Week Trial		\$12.95	
1-year EBN Print at Suite subscriber rate		\$30.00	
GreenSpec 6 at Suite subscriber rate*		\$30.00	
<b>Environmental Building News (EBN) Print Ed. 1-year</b>			
1-year (12 issues)		\$99.00	
2-years (24 issues)		\$169.00	
EBN Delivery outside North America		\$30.00	
<b>Single Copy Resources</b>			
GreenSpec® Directory 6th Ed.*		\$89.00	
Green Building Advisor CD-ROM*		\$49.00	
Green Building Products 2nd Ed.*		\$34.95	
<b>* VERMONT residents only: 6% Sales Tax on CDs/Books</b>			
<b>SHIPPING for orders with CD/Book: \$8 US/Can., \$15 others</b>			
<b>TOTAL AMOUNT ENCLOSED, OR AUTHORIZED FOR CREDIT CARD CHARGE</b>			

Send me your FREE monthly email Bulletin.

Mail to: BuildingGreen, Inc. · 122 Birge St., Suite 30 · Brattleboro, VT 05301. 800/861-0954 · 802/257-7300