

# GREEN ARCHITECTURE CHECKLIST: RESIDENTIAL

*Make your buildings sustainable: walk the talk. Please do copy this checklist and distribute it.*  
Colorado AIA Committee on the Environment    Thomas Doerr, Architect    [www.BuildSustainably.org](http://www.BuildSustainably.org)

## GREEN SITING & LAND USE

**Build within already developed areas.** As opposed to urban sprawl, infill development preserves wilderness and agriculture and raises density thereby enabling neighborhood shops & services and alternative transportation.

**Design mixed-use projects** in which residential and commercial uses are intermingled, to help create lively communities and reduce automobile use.

**Locate buildings to provide access to public transportation,** bicycle paths, and walking access to basic services. This minimizes automobile use. Driving can also be reduced by working at home, therefore consider home office needs with layout and wiring.

**Locate buildings to minimize environmental impact.** Cluster buildings or build attached units to preserve open space and wildlife habitats, avoid especially sensitive areas including wetlands, and keep roads & service lines short. Leave the most pristine areas untouched and build on areas that have been previously damaged.

**Situate buildings to benefit from vegetation.** Trees on the east and west sides of a building can reduce cooling loads. Do not block the winter sun with trees on the south. Dense hedgerows and shrubbery can block cold winter winds or help channel cool summer breezes into buildings. Landscape with drought-resistant native plants and perennial groundcovers.

## GREEN BUILDING DESIGN

**Smaller is better.** Optimize use of interior space with good 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 very high levels of insulation and avoid thermal bridging, high-performance windows tuned to the sun (heat reflective in east & west), and tightly sealed construction. Attached buildings minimize expensive inefficient exterior envelope.

**Comfort for free.** Passive solar design can save over 80% of a typical home's heating, cooling, daylighting, and ventilation costs. Make sure nothing, including trees, is blocking your home's southern sun. Orient buildings with their long sides within 15 degrees of true south. On southern windows, allow the low winter sun in. Block the high summer sun externally. Minimize glass on east and west. Build thermal mass throughout your house.

**Get free energy.** Design buildings with solar water heating and photovoltaic (PV) panels or for future solar installations. Slope roofs to south for optimal solar energy.

**Optimize material use.** Minimize waste by designing for standard ceiling heights and building dimensions. Avoid waste from structural over-design. Simplify building geometry.

**Make it easy for occupants to recycle.** Make provisions for the processing of recyclables such as recycling bins near the kitchen and under-sink compost receptacles.

**Rooftop water catchment systems** should be considered for collecting rainwater and using it for landscape irrigation. Look into the feasibility of using gray water: used water from sinks, showers, or clothes washers.

## GREEN MATERIALS

**Avoid ozone-depleting chemicals** in mechanical equipment and insulation. HCFCs should be avoided where possible. Avoid foam insulation made with HCFCs. Consider cellulose.

**Use locally produced building materials.** Transportation is costly in both energy use and pollution generation. Look for locally produced materials such as stone. Local hardwoods, for example, are preferable to tropical woods.

**Use salvaged building products** or products made from recycled material such as cellulose insulation, Homosote, Thermo-ply, floor tile made from ground glass, and recycled plastic, lumber & carpet.

**Seek responsible wood supplies.** Use lumber from independently certified (FSC), well-managed forests. Engineered wood can be substituted for old-growth wood. 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. Minimize use of pressure treated lumber: use detailing that will prevent soil contact.

## GREEN EQUIPMENT

**Use high-efficiency appliances and lights.** Use only Energy Star rated appliances such as refrigerators and furnaces. Use fluorescent and LED lighting.

**Use water-efficient equipment.** Water-conserving toilets, showerheads, and faucet aerators not only reduce water use, they also reduce demand on septic systems or sewage treatment plants. Centrally locating fixtures reduces hot water cost.