



40 Tips for Sustainable Home Design and Construction

Adapted from an article by Eric Corey Freed at ProudGreenHome.com

1. Consider hiring an architect or other green building specialist in your area.
2. Investigate green building programs such as [LEED for Homes](#) or [Passive House Institute U.S.](#)
3. Take advantage of [passive solar design](#) by orienting the building and most of the windows to the sun (south) to incorporate passive heating & cooling techniques.
4. Investigate [thermal mass](#) options (e.g., using concrete to store heat energy).
5. Investigate alternative wall systems (e.g., ICFs - Insulating Concrete Forms, SIPs - Structural Insulated Panels, double stud walls).
6. Save big on your energy bills by doubling the minimum amount of insulation required. The higher the [R-value](#), the better. Use only non-toxic or recycled content insulation.
7. Provide conduit so as to be able to add solar panels in the future.
8. Recycle job site construction and demolition waste.
9. Investigate ways to reduce quantities of building materials, resources, and energy.
10. Insulate the exterior of foundation walls before backfill (filling in with dirt) whether you have a basement, crawl space - or neither.
11. Seal all penetrations in the exterior walls, foundation, and roof.
12. Spend the money to get good quality windows and doors. (Most heat and cooling loss happens through these openings).
13. Choose a light color roof if you live in a warm region. A non-asphalt roof lasts longer.
14. Investigate locally sourced and manufactured products and materials.
15. Use OSB (oriented strand board) for subfloor and sheathing.
16. Substitute solid sawn lumber with engineered or dimensional lumber.
17. Use an on-demand, [tankless water heater](#) and an [on-demand hot water pumping system](#) rather than a whole house re-circulating hot water loop, which has proven to have high energy losses in delivering hot water quickly.
18. Install a whole house water filter.
19. Purchase appliances that are high-level Energy Star models.
20. Provide dimmers on light switches. **Note: when installing dimmers on fixtures using CFL or LED bulbs, be sure to verify compatibility of specific dimmers, bulbs and fixtures. (Some bulbs are not designed for dimming – the use of incorrect bulbs/dimmers/fixtures can lead to failure.)

21. For cleaner, healthier indoor air, use low/no-VOC (volatile organic compounds) and formaldehyde-free products.
22. Use local lumber or FSC (Forest Stewardship Council) certified wood.
23. Use durable composite lumber for all exterior decks.
24. Use products with high recycled content.
25. Use treated wood that does not contain chromium, CCA (chromated copper arsenate) or arsenic for decking and sill plates.
26. Consider alternatives to traditional wall-to-wall carpet, which is manufactured using a [host of chemicals that can affect your family's health](#). (They also tend to produce more waste during the manufacturing process.) Use carpet tiles from a company with a recycling program or area rugs over hard surfaces.
27. If you use drywall, choose a product with recycled content. Investigate other natural wall finishes.
28. You can replace up to 35 percent of the Ordinary Portland Cement (OPC) in concrete with fly ash (a byproduct of coal burning). Consult with your contractor and let him/her know you are interested in pursuing this.
29. Avoid vinyl products. Vinyl is manufactured with petroleum and has been found to adversely affect health. As an alternative to vinyl flooring consider linoleum, made from wood flour, resins and linseed oil. It's available in a variety of colors and can be cut and pieced into any pattern you can dream up. Other substitutes include rubber, cork, or Marmoleum (a type of linoleum). Or you may consider leaving floors exposed (for example, if they are concrete).
30. Avoid standard particle board cabinets and use formaldehyde-free medium density fiberboard, plywood or wheat board for cabinet boxes. (Many pressed wood products are manufactured with formaldehyde, which negatively affects health).
31. Consider bamboo, reclaimed or sustainably harvested wood, and wheat board for cabinet doors and drawers, and sealed with a no- or low-volatile organic compound clear finish.
32. Install new [dual-flush toilets](#) and save a lot of water.
33. Look for kits to retrofit existing toilets to dual-flush.
34. Install a [water-saving showerhead](#) and save as much as 2,300 gallons of water annually. Consider installing a [grey water heat recovery system](#) for your shower.
35. Landscape using indigenous [xeriscape](#) plants that require little water.
36. Incorporate [permeable paving](#) in all driveways and exterior surfaces to conserve water.
37. Consider rainwater collection options (e.g., cisterns or rain barrels).
38. Research the pros and cons of various [countertops](#) for kitchen and bath surfaces. Consider tops fashioned from recycled glass or composite.
39. Consider a [plumbing manifold system](#), a central control that feeds flexible hot and cold water supply lines to individual fixtures in your home. (This is the plumbing equivalent to an electrical circuit breaker box.)
40. Pre-plumb your house for [solar thermal water heating](#).