

Chapter Four: Summary of Green Building Benefits



A. Site

BENEFITS

1. Recycle Job Site Construction and Demolition Waste	Reduces pressure on landfills, saves money by reducing landfill fees, and provides raw materials for future building products.
2. Salvage Reusable Building Materials	Reduces landfill deposits, decreases disposal costs and saves natural resources.
3. Remodel for Mixed Use, Adaptive Reuse, and Historic Preservation	Diverts demolition waste, preserves neighborhood character and conserves resources.
4. Protect Native Soil	Reduces storm runoff, fertilizer and pesticide requirements, improves water quality and conserves irrigation water.
5. Minimize Disruption of Existing Plants and Trees	Helps prevent soil erosion, maintains existing sources of natural cooling, diverts waste from landfills, and adds a unique character to the community.
6. Implement Construction Site Stormwater Practices	Minimizes erosion and water pollution; and protects the Bay.
7. Protect Water Quality with Landscape Design	Reduces the volume of polluted water flowing into rivers or the Bay.
8. Design Resource-Efficient Landscapes and Gardens	Helps conserve water, reduces use of chemicals, and creates healthier soil and plants.
9. Reuse Materials/Use Recycled-Content Materials for Landscape Areas	Conserves natural resources and strengthens markets for recycled materials.
10. Install High Efficiency Irrigation Systems	Reduces landscape water use and lowers water costs.
11. Provide for On-Site Water Catchment/Retention	Reduces the need to use treated, potable water for lawns and gardens.

B. Foundation

1. Incorporate Recycled Flyash in Concrete	Increases the strength and durability of the concrete and reduces the amount of cement needed.
2. Use Recycled-Content Aggregate	Saves money, natural resources and energy.
3. Insulate Foundation Before Backfill	Reduces utility bills by minimizing heat loss.

C. Structural Frame

1. Substitute Solid Sawn Lumber with Engineered Lumber	Reduces demand for virgin lumber, is stronger, straighter, and more durable.
2. Use FSC Certified Wood for Framing	Ensures long-term availability of precious woods.
3. Use Wood I-Joists for Floors and Ceilings	Uses 50% less wood fiber, will not twist, warp or split, stronger and lighter than 2x10s or 2x12s and can span greater distances.
4. Use Web Floor Trusses	Eliminates waste. Reduces the pressure on old growth forests.
5. Design Energy Heels on Roof Trusses 6" or More	Allows for full insulation around the house, saving energy and money.
6. Use Finger-Jointed Studs for Vertical Applications	Uses recycled-content materials, is straighter and stronger than solid sawn studs, and eliminates crooked walls, thereby reducing material waste.
7. Use Engineered Studs for Vertical Applications	Engineered studs are straighter, and will not deform, twist, split or warp. They save wood by using small laminated pieces.
8. Use Recycled-Content Steel Studs for Interior Framing	Steel reduces the need for wood and provides strong interior walls.
9. Use Structural Insulated Panels (SIPs)	Reduces infiltration relative to frame construction, is energy-efficient, provides excellent soundproofing, is erected quickly, and saves wood by eliminating much of the conventional framing lumber.
10. Apply Advanced Framing Techniques	Makes the home more energy efficient, saves wood and construction costs. It also allows for a higher percentage of the wall to be insulated reducing frame conduction heat loss.
11. Use Reclaimed Lumber for Non-Structural Applications	Reduces resource consumption and landfill deposits, and is often of higher quality than new lumber.
12. Use OSB for Subfloor and Sheathing	Reduces the need for large diameter old-growth trees, is as strong as traditional plywood sheet material and is less expensive.

D. Exterior Finish**BENEFITS**

1. Use Sustainable Decking Materials	Contains recycled-content materials, is more durable and reduces demand for old-growth timbers.
2. Use Treated Wood That Does Not Contain Chromium or Arsenic	Reduces exposure to chromium and arsenic, which are harmful, particularly to children who play on structures built with treated wood.
3. Install House Wrap Under Siding	Protects the home by diverting water away from the wall cavity.
4. Use Fiber-Cement Siding Materials	Lasts longer, is fire-resistant, and reduces maintenance costs.

E. Plumbing

1. Install Water Heater Jacket	Reduces heat loss by 10% (on older heaters.)
2. Insulate Hot and Cold Water Pipes	Saves energy and water, and reduces water heating costs.
3. Retrofit all Faucets and Showerheads with Flow Reducers	Saves water and is a low cost option.
4. Replace Toilets with Ultra-Low-Flush Models	Saves water.
5. Install Chlorine Filter on Showerheads	Reduces chlorine absorbed by skin.
6. Convert Storage to Tankless Water Heater	Saves energy, is often quicker and more reliable.
7. Install Water Filtration Units at Faucets	Reduces contaminants in water.
8. Install On-Demand Hot Water Circulation Pump	Deliver hot water quicker to fixture, saving water and energy.

F. Electrical

1. Install Compact Fluorescent Light Bulbs (CFLs)	Lowers energy bills and reduces need for energy production.
2. Install IC-AT Recessed Lighting Fixtures with CFLs	Saves energy and reduces the amount of heat loss/gain.
3. Install Lighting Controls	Reduces need for energy and lowers energy bills.
4. Install High Efficiency Ceiling Fans with CFLs	Reduces the need for air conditioning. Saves energy.

G. Appliances

1. Install Energy Star® Dishwasher	Reduces water and energy use, and lowers utility bills.
2. Install Washing Machine with Water and Energy Conservation Features	Uses less water and energy than conventional top loading washers.
3. Install Energy Star® Refrigerator	Reduces energy and can save over 10% on utility bill.
4. Install Built-In Recycling Center	Makes it easy and convenient to recycle.

H. Insulation

1. Upgrade Wall and Ceiling Insulation to Exceed Title 24 Requirements	Lowers utility bills, improves comfort, decreases heating and cooling needs and makes home quieter.
2. Install Floor Insulation Over Crawl Space	Lowers utility bills, improves comfort.
3. Install Recycled-Content, Fiberglass Insulation with No Added Formaldehyde	Reduces indoor air quality problems due to formaldehyde binders, and can contain up to 30% recycled glass.
4. Use Advanced Infiltration Reduction Practices	Reduces drafts, and makes home more energy-efficient.
5. Use Cellulose Insulation	Increases energy-efficiency, uses recyclable materials, and contains no formaldehyde.
6. Install Alternative Insulation Materials	Uses recycled-content materials and provides superior air infiltration resistance.

I. Windows

BENEFITS

1. Install Energy-Efficient Windows	Increases energy-efficiency, and provides greater comfort.
2. Install Low SHGC Window Film on Single-Glazing	Reduces overheating, improves comforts and lowers the need for additional cooling.

J. Heating, Ventilation and Air Conditioning (HVAC)

1. Use Duct Mastic on all Duct Joints	Improves indoor air quality, and keeps the homes more comfortable.
2. Install New Ductwork within Conditioned Space	Reduces energy loss and improves occupant comfort.
3. Vent Range Hood to the Outside	Improves indoor air quality.
4. Clean all Ducts Before Occupancy	Reduces dust around the house after occupancy.
5. Install Solar Attic Fan	Increases comfort and reduces air conditioning use.
6. Install Attic Ventilation Systems	Increases comfort and reduces air conditioning use.
7. Install Whole House Fan	Reduces electricity usage, and moves large volumes of air to achieve comfort at higher temperatures without air conditioning.
8. Install Sealed Combustion Furnaces and Hot Water Heaters	Improves indoor air quality, reduces the danger of carbon monoxide contamination.
9. Replace Wall-Mounted Electric and Gas Heaters	Reduces fire hazard, saves energy and improves indoor air quality.
10. Install 13 SEER and 11 EER or Higher Air Conditioning with a Thermostatic Expansion Valve (TXV)	Saves money and energy, and reduces peak load problems.
11. Install Air Conditioning with Non-HCFC Refrigerants	Reduces depletion of the ozone layer.
12. Install 90% Annual Fuel Utilization Efficiency (AFUE) Furnace	Reduces air emissions, costs less to operate, and saves natural resources.
13. Retrofit Wood Burning Fireplaces	Reduces drafts, pollutant particulate matter and the amount of heat taken from the home.
14. Install Zoned, Hydronic, Radiant Heating	Saves energy by only heating the zone that requires heat.
15. Install High Efficiency Filter	Makes living space healthier, and reduces microparticulates from the air.
16. Install Heat Recovery Ventilation Unit (HRV)	Improves indoor air quality and reduces energy.
17. Install Separate Garage Exhaust Fan	Creates healthier indoor environments.

K. Renewable Energy and Roofing

1. Pre-Plumb for Solar Water Heating	Saves money should a solar system be installed in the future.
2. Install Solar Water Heating	Reduces the use of gas or electricity, and pay back in as little as seven years.
3. Pre-Wire for Future Photovoltaic (PV) Installation	Allows installation of PV system in the future.
4. Install Photovoltaic (PV) System	Decreases reliance on conventional power plants.
5. Select Safe and Durable Roofing Materials	Reduces landfill deposits and saves money on replacement costs.
6. Install Radiant Barrier	Keeps the whole home cooler by reducing heat build-up in attic spaces.

L. Natural Heating and Cooling

1. Incorporate Passive Solar Heating	Reduces heating requirements by 30-50%, saves energy and money.
2. Install Overhangs or Awnings over South Facing Windows	Reduce heat gain, making the home more comfortable in summer.
3. Plant Deciduous Shade Trees on the West and South Sides	Reduce summer air-conditioning costs while providing numerous benefits to the environment.

M. Indoor Air Quality and Finishes**BENEFITS**

1. Use Low/No-VOC Paint	Improves indoor air quality, reduces smog, and is healthier for installers and occupants.
2. Use Low VOC, Water-Based Wood Finishes	Reduces smog and is healthier for installers and occupants.
3. Use Low/No-VOC Adhesives	Improves indoor air quality, and are healthier for occupants and installers.
4. Use Salvaged Building Materials for Interior Finish	Keeps valuable resources out of landfill.
5. Use Engineered Sheet Goods with No Added Formaldehyde	Reduces exposure to formaldehyde, provides reuse of a former waste product.
6. Use Exterior Grade Plywood for Interior Uses	Reduces formaldehyde exposure to occupants.
7. Seal all Exposed Particleboard or MDF	Reduces exposure of harmful emissions to occupants.
8. Use FSC Certified Materials for Interior Finish	Assures the long-term availability of precious woods while protecting ancient, old-growth forests.
9. Use Finger-Jointed or Recycled-Content Trim	Uses material more efficiently, saves money and resources, and is straighter and more stable than conventional clear wood.
10. Install Whole House Vacuum System	Expels dust outside the house, improving indoor air quality.

N. Flooring

1. Select FSC Certified Wood Flooring	Assures the long-term availability of woods while protecting ancient, old-growth forests.
2. Use Rapidly Renewable Flooring Materials	Reduces demand for old-growth hardwood.
3. Use Recycled-Content Ceramic Tiles	Uses recycled-content materials and is easy to maintain.
4. Install Natural Linoleum in Place of Vinyl	Reduces exposure to toxins, is durable, and healthier for occupants and installers.
5. Use Exposed Concrete as Finished Floor	Eliminates the need for additional flooring materials, is easy to maintain, and very durable.
6. Install Recycled-Content Carpet with Low VOCs	Saves resources, diverts waste from landfills, is more resilient and colorfast than carpet made from virgin fibers.