Chapter Four:
Green Remodeling Illustrations

“We believe that homeowners deserve a home that is not only beautiful, but one that is more energy-efficient, comfortable and healthier for the family.”

—Fred Brecht, Brecht Construction, Lafayette, CA
Addition or Major Remodel

Consider these green remodeling options when building an addition or renovating a major portion of the home.

Site
- Protect Existing Topsoil and Minimize Disruption of Existing Plants and Trees
- Deconstruct Instead of Demolish
- Recycle Construction and Demolition Waste

Foundation
- Replace Portland Cement in Concrete with Recycled Flyash or Slag
- Retrofit Crawl Space to Control Moisture
- Design and Build Structural Pest Controls

Landscape
- Construct Resource-Efficient Landscapes
- Use Fire-Safe Landscaping Techniques
- Minimize Turf
- Plant Shade Trees
- Group Plants by Water Needs (Hydrozoning)
- Install High Efficiency Irrigation Systems
- Add Compost to Promote Healthy Topsoil
- Use Salvaged or Recycled-Content Materials for Landscape Elements
- Reduce Light Pollution
- Collect and Retain Rainwater for Irrigation

Structural Frame
- Apply Optimal Value Engineering
- Use Engineered Lumber
- Use FSC-Certified Wood
- Design Energy Heels on Roof Trusses
- Use Solid Wall Systems
- Install Reflective Roof and Radiant Barrier
- Replace Single-Pane Windows with Double-Pane Windows
- Retrofit with Storm Windows
- Install Low-SHGC Window Film on Single-Pane Windows
- Retrofit Structure for Earthquakes
- Reduce Pollution Entering the Home from the Garage

Exterior Finish
- Use Recycled-Content or FSC-Certified Decking
- Install Rain Screen Wall System
- Use Durable and Noncombustible Siding Materials
- Use Durable and Noncombustible Roofing Materials

Plumbing
- Choose High Efficiency Water Heaters
- Distribute Domestic Hot Water Efficiently
- Replace Toilets with High Efficiency Toilets
- Install Water-Efficient Faucets and Showerheads
Heating, Ventilation and Air Conditioning
- Design and Install HVAC System to ACCA Recommendations
- Install High Efficiency Heating System
- Install High Efficiency Air Conditioning with Environmentally Responsible Refrigerants
- Install Effective Ductwork
- Install High Efficiency HVAC Filter
- Retrofit Wood-Burning Fireplaces to Improve Energy Efficiency and Air Quality
- Install Whole House Fan, Ceiling Fans or Air-to-Air Heat Exchanger for Ventilation
- Install Effective Exhaust Systems in Bathrooms and Kitchen

Renewable Energy
- Install Solar Water Heating System
- Install Photovoltaic (PV) System

Insulation
- Install Recycled-Content Insulation
- Install Insulation That Emissions Zero/Low Levels of Formaldehyde and VOCs
- Weatherize the Home
- Upgrade Insulation to Exceed Current Title 24 Requirements

Building Performance
- Conduct Whole House Inspection/Diagnostic Testing and Make Improvements

Finishes
- Design Entryways to Reduce Tracked-In Contaminants
- Use Low/Zero-VOC Interior Paint
- Use Low-VOC, Water-Based Wood Finishes
- Use Low-VOC Construction Adhesives
- Use Recycled-Content Paint
- Use Environmentally Preferable Materials for Interior Finishes
- Reduce Formaldehyde in Interior Finishes
- Use Environmentally Preferable Flooring

Appliances
- Install Water- and Energy-Efficient Dishwasher
- Install ENERGY STAR® Clothes Washing Machine
- Install ENERGY STAR® Refrigerator
- Install Built-In Recycling and Composting Center
- Upgrade to Energy-Efficient Lighting
- Install Low-Mercury Fluorescent Lighting
- Install Lighting Controls

Other
- Incorporate Green Remodeling Checklist in Blueprints
- Develop Homeowner Manual of Green Features and Benefits

- Minimize turf
- Recycled-content insulation with no added formaldehyde
- Rain screen wall system
- Fiber cement siding
- Upgrade to double pane, low-e window
- Hot and cold water pipes insulated
Second Floor
Consider these green remodeling options in a second floor addition.

Site
- Deconstruct Instead of Demolish
- Recycle Construction and Demolition Waste

Structural Frame
- Apply Optimal Value Engineering
- Use Engineered Lumber
- Use FSC-Certified Wood
- Design Energy Heels on Roof Trusses
- Install Reflective Roof and Radiant Barrier
- Replace Single-Pane Windows with Double-Pane Windows
- Retrofit with Storm Windows
- Install Low-SHGC Window Film on Single-Pane Windows
- Retrofit Structure for Earthquakes

Exterior Finish
- Install Rain Screen Wall System
- Use Durable and Noncombustible Siding Materials
- Use Durable and Noncombustible Roofing Materials

Plumbing
- Choose High Efficiency Water Heaters
- Distribute Domestic Hot Water Efficiently

Heating, Ventilation and Air Conditioning
- Design and Install HVAC System to ACCA Recommendations
- Install High Efficiency Heating System
- Install High Efficiency Air Conditioning with Environmentally Responsible Refrigerants
- Install Effective Ductwork
- Install High Efficiency HVAC Filter
- Retrofit Wood-Burning Fireplaces to Improve Energy Efficiency and Air Quality
- Install Mechanical Ventilation System for Cooling

Renewable Energy
- Install Solar Water Heating System
- Install Photovoltaic (PV) System
Building Performance
- Conduct Whole House Inspection/ Diagnostic Testing and Make Improvements

Finishes
- Use Low/Zero-VOC Interior Paint
- Use Low-VOC, Water-Based Wood Finishes
- Use Low-VOC Construction Adhesives
- Use Environmentally Preferable Materials for Interior Finishes
- Reduce Formaldehyde in Interior Finishes
- Use Environmentally Preferable Flooring

Appliances
- Install ENERGY STAR® Clothes Washing Machine
- Upgrade to Energy-Efficient Lighting
- Install Low-Mercury Fluorescent Lighting
- Install Lighting Controls

Other
- Incorporate Green Remodeling Checklist in Blueprints
- Develop Homeowner Manual of Green Features and Benefits

Insulation
- Install Recycled-Content Insulation
- Install Insulation That Emits Zero/Low Levels of Formaldehyde and VOCs
- Weatherize the Home
- Upgrade Insulation to Exceed Current Title 24 Requirements
Bathroom Remodel

Consider these green remodeling options in a bathroom.

**Site**
- Deconstruct Instead of Demolish
- Recycle Construction and Demolition Waste

**Structural Frame and Building Envelope**
- Apply Optimal Value Engineering
- Use Engineered Lumber
- Use FSC-Certified Wood
- Replace Single-Pane Windows with Double-Pane Windows
- Retrofit with Storm Windows
- Install Low-SHGC Window Film on Single-Pane Windows

**Plumbing**
- Choose High Efficiency Water Heaters
- Distribute Domestic Hot Water Efficiently
- Replace Toilets with High Efficiency Toilets
- Install Water-Efficient Faucets and Showerheads

**Heating, Ventilation and Air Conditioning**
- Install Effective Ductwork
- Install Effective Exhaust System

**Insulation**
- Install Recycled-Content Insulation
- Install Insulation That Emits Zero or Low Levels of Formaldehyde and VOCs
- Weatherize
- Upgrade Insulation to Exceed Current Title 24 Requirements

**Finishes**
- Use Low/No-VOC Interior Paint
- Use Low-VOC, Water-Based Wood Finishes
- Use Low-VOC Construction Adhesives
- Use Environmentally Preferable Materials for Interior Finishes
- Use Environmentally Preferable Flooring
Appliances
- Install ENERGY STAR® Clothes Washing Machine
- Upgrade to Energy-Efficient Lighting
- Install Low-Mercury Fluorescent Lighting
- Install Lighting Controls

Other
- Incorporate Green Remodeling Checklist in Blueprints
- Remodel for Universal Design
Kitchen Remodel
Consider these green remodeling options in a kitchen.

Site
- Deconstruct Instead of Demolish
- Recycle Construction and Demolition Waste

Landscape
- Plant Shade Trees on West and South Sides

Structural Frame and Building Envelope
- Replace Single-Pane Windows with Double-Pane Windows
- Retrofit with Storm Windows
- Install Low-SHGC Window Film on Single-Pane Windows

Plumbing
- Distribute Domestic Hot Water Efficiently
- Install Water-Efficient Faucets

Heating, Ventilation and Air Conditioning
- Install Effective Exhaust System
- Install Mechanical Ventilation System for Cooling

Insulation
- Install Recycled-Content Insulation
- Install Insulation That Emits Zero or Low Levels of Formaldehyde and VOCs
- Weatherize
- Upgrade Insulation to Exceed Current Title 24 Requirements

Building Performance
- Conduct Whole House Inspection/
  Diagnostic Testing and Make Improvements

Finishes
- Design Entryways to Reduce Tracked-In Contaminants
- Use Low/No-VOC Interior Paint
- Use Low-VOC, Water-Based Wood Finishes
- Use Low-VOC Construction Adhesives
- Use Environmentally Preferable Materials for Interior Finishes
- Use Environmentally Preferable Flooring

Appliances
- Install Water- and Energy-Efficient Dishwasher
- Install ENERGY STAR® Clothes Washing Machine
- Install ENERGY STAR® Refrigerator
- Install Built-In Recycling and Composting Center
- Upgrade to Energy-Efficient Lighting
- Install Low-Mercury Fluorescent Lighting
- Install Lighting Controls
Flow reducer
Recycled-content tile
Formaldehyde-free cabinet materials
Upgraded insulation
FSC-certified trim
Low/no VOC paint
Non-toxic household cleaners
ENERGY STAR® dishwasher
Built-in recycling and composting center

**Other**
- Incorporate Green Remodeling Checklist in Blueprints
- Develop Homeowner Manual of Green Features and Benefits