

EarthCraft House™



Sensibly Built for the Environment

Southface Energy Institute

- Southface: showcase energy efficiency and sustainability
- EarthCraft House: green-building program of Greater Atlanta HBA



A Non-Profit Partnership



GRAND PARTNERS



bensonmilesTND



Georgia-Pacific



Priorities for Sustainable Construction

1. Save Energy
2. Recycle Buildings
3. Create Community
4. Reduce Material Use
5. Save Water
6. Maximize Longevity
7. Protect and Enhance Site
8. Healthy Buildings
9. Minimize Construction and Demolition Waste
10. Green Your Business



From *Environmental Building News*

Habitat for
Humanity



New
American
Home



Home
Expo



Builder Advantages

- Higher profit
- Fewer callbacks
- Better subcontractor performance
- Recognition as industry leader
- Independent advice



Home Buyer Benefits

- More house for the money
- Better quality and higher resale value
- Lower energy, water and maintenance costs
- Greater comfort
- Quiet and healthy
- Enhanced durability and peace of mind



True Cost of Homeownership

- Mortgage payment
- Insurance
- Operation costs - water, energy, waste disposal
- Maintenance - interior and exterior
- Repair and replacement
- Health related costs



Improving Cash Flow

	<i>Standard</i>	<i>Energy Efficient</i>	
Purchase Price	\$250,000	\$253,000	
Down Payment	\$50,000	\$50,600	
Loan Amount	\$200,000	\$202,400	
Interest	7%	7%	
Monthly PITI	\$1,331	\$1,347	(-\$16)
Energy Cost	\$220	\$160	(+\$60)
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Total Expenses	\$1,551	\$1,507	(+\$44)



Energy Efficient Mortgages

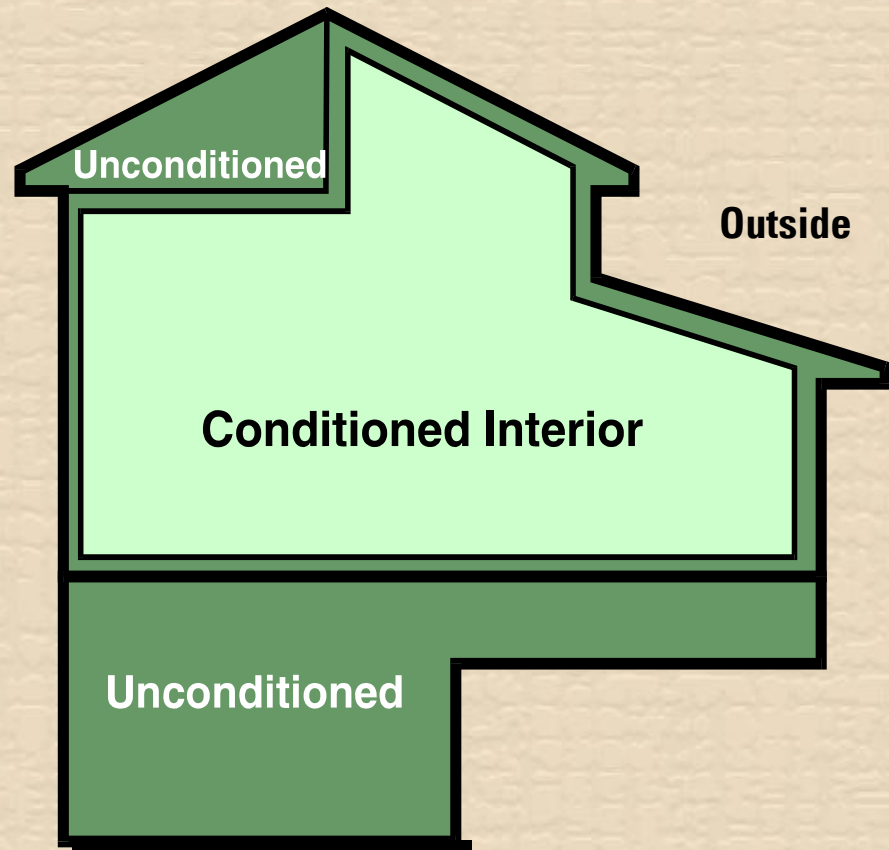


FannieMae



The House as a System

- **Building Envelope**
 - Continuous Air Barrier
 - Complete Insulation Coverage
- **Proper Heating and Cooling Systems**
- **Controlled Ventilation**



Energy Myth

Never build a house “too tight!”



Scoring a House

- 12 categories
- Minimum total of 150 points
- Combination of energy efficiency and environmentally responsible practices
- Innovation encouraged



EarthCraft House Categories

- Site Planning
- Building Envelope and Systems
- Appliances/Lighting
- Resource Efficient Design
- Resource Efficient Materials
- Waste Management
- Indoor Air Quality
- Indoor Water Conservation
- Outdoor Water Conservation
- Homeowner Education
- Builder Operations
- Bonus Points



Energy Efficient Building Envelope and Systems

Required: Home must meet or exceed Energy Code


Required: Home must meet or exceed ENERGY STAR



ENERGY STAR Homes

- 15% more efficient than IECC 2004
- Requires energy modeling or Builder Option Package (BOP) with blower door and duct blaster tests

www.energystar.gov



ENERGY STAR® SEARCH

A NEW ENERGY STAR® QUALIFIED HOME IMPROVES OUR ENVIRONMENT

PRODUCTS	HOME IMPROVEMENT	NEW HOMES	BUSINESS IMPROVEMENT	PARTNER RESOURCES
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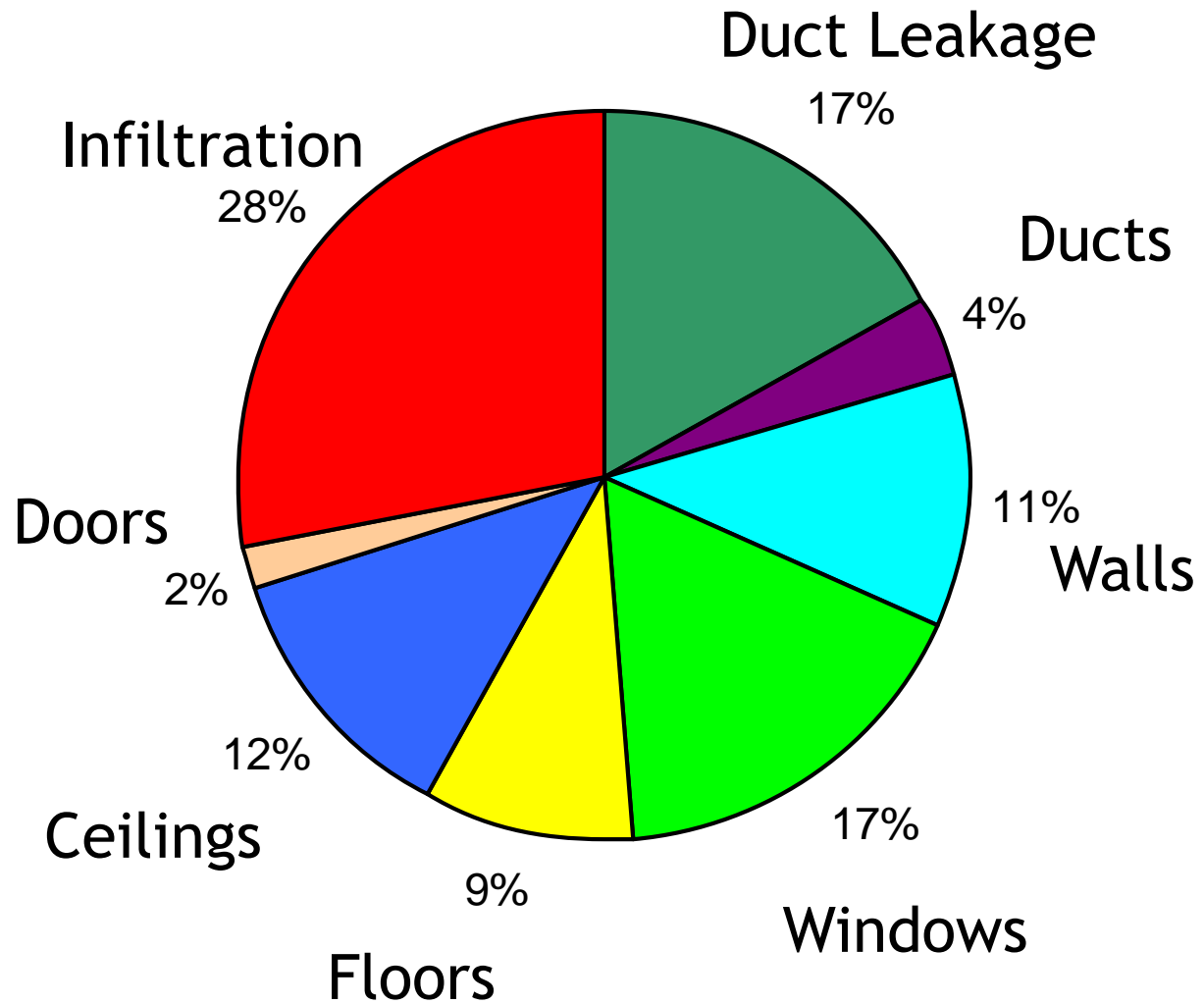
[Home](#) > [New Homes](#) > [Benefits of ENERGY STAR Qualified New Homes](#) [email this](#)

Benefits of ENERGY STAR Qualified New Homes

ENERGY STAR qualified new homes offer:

- A Label Backed by the Government**
All ENERGY STAR qualified new homes are certified by independent third party to meet EPA's strict guidelines for energy efficiency.
- Lower Utility Costs**
ENERGY STAR qualified new homes use substantially less energy for heating, cooling, and water heating. Homeowners can expect to save about \$200-\$400 annually on their utility bills.
- Increased Comfort**
The energy-efficient features of ENERGY STAR qualified new homes keep out excessive heat, cold, and noise, and ensure consistent temperatures between and across rooms - making these homes more comfortable to live in.
- A Better Future**
Millions of consumers who have purchased an ENERGY STAR qualified new home are helping to reduce our nation's energy needs and building a cleaner environment for the future.

Energy used
to heat and
cool



Blower Door Test

Southface measures the amount of air that leaks through the building envelope with a blower door test.

- Maximum leakage $\text{cfm}_{50} / \text{sfbe} < 0.50$
- Points earned for leakage $\text{cfm}_{50} / \text{sfbe} < 0.40$
- Extra points earned for leakage $\text{cfm}_{50} / \text{sfbe} < 0.25$
- sfbe is square footage of building envelope surface area
- Address ventilation



Duct Leakage

- Duct tape is NOT allowed by modern codes (tape must be UL181A or UL181B)
- Mastic is required for a permanent seal



Duct Work & Air Handler

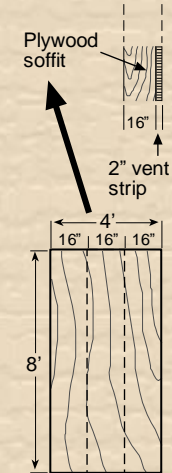
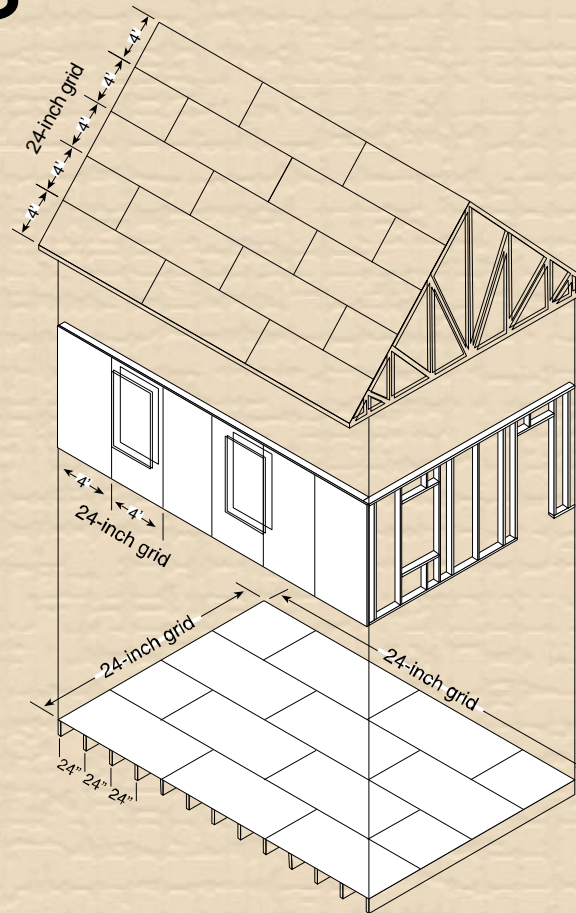
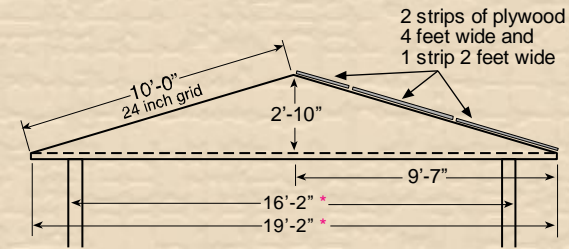
Required & Point Items

- Duct leakage must be less than 10% of conditioned floor area
- Duct leakage less than 5% of conditioned floor area



Resource Efficient Design

- Smaller homes
- Outside dimensions in 2' increments
- Optimum Value Engineering



Cut plywood sheet into equal strips for soffit assembly. Paint/seal upper and lower surfaces of soffit as well as edges.

* The 2" dimension comes from assuming that 1" thick insulation sheathing is installed over framing.

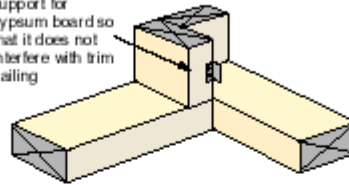


Advanced framing can cut lumber needs by 15-30 %

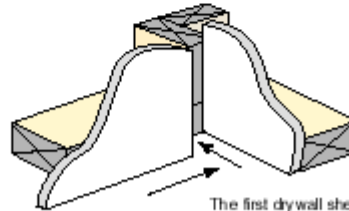
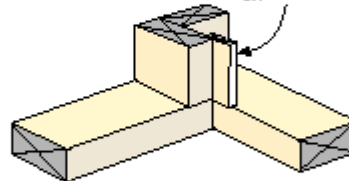


Two-stud corner

Position clip
support for
gypsum board so
that it does not
interfere with trim
nailing

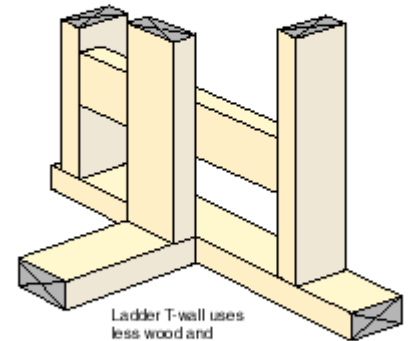


Backer support for
gypsum board



The first drywall sheet is
installed against side with clip
or backer

Ladder "T"-wall



Ladder T-wall uses
less wood and
allows for
insulation
coverage behind
partition walls

Recycled/Natural Content

- Fly ash or slag in concrete
- Insulation
- Flooring
- Carpet and pad
- Outdoor decking



Advanced Products

- Structural insulated panels (SIP's)
- Insulated concrete forms (ICF's)



Recycle Construction Waste

Some materials can be ground and site-applied, including:

- wood
- brick
- drywall
- shingles

Other recyclable materials:

- cardboard
- metal
- plastic



Solar water heating

- Average family spends \$400 per year on water heating
- Solar water heating can drastically reduce this cost
- Installed on south-facing roof

Over one million consumers in the U.S. are using solar water heaters



EarthCraft House™



*Sensibly Built for the
Environment*



How to Certify the First House

A builder must:

- Join the local HBA
- Join the EarthCraft House program
- Sign ENERGY STAR partnership agreement
- Attend EarthCraft House training
- Schedule a design review
- Submit a Scoring Worksheet
- Schedule a pre-drywall inspection
- Schedule and pass a final inspection

