
Chapter 1

Why You Should Build Energy-Efficient Houses

1. Why read this book?

Why use energy-efficient building strategies? What can you gain from building energy-efficient homes?

Consider these basic reasons:

- Your clients can anticipate more comfortable living, lower utility bills and higher home resale value.
- Selling will be easier, because of the convincing differences between your homes and those of your less aware competitors.
- Home buyers will be gratified with their purchase and will provide referrals. They will also be prospects for future purchases.
- Your company reputation and prestige will be improved by your association with better-built, more efficient homes.

This all adds up to one key point: **You will make more money by selling energy efficiency.** This book provides marketing ideas to assist you in selling energy-efficient homes. Most of the strategies (concepts and techniques) described in this book can be quickly, easily and, in many cases, inexpensively built into your homes. Individually, they are desirable features in today's houses. Putting them all together into an energy-efficiency package will give you highly marketable homes and increased profits.

2. How to use this book

This book will lead you through the various energy-efficient building strategies that have proven effective in Florida homes. It will give you marketing ideas to help sell these concepts and techniques to your clients. It tells how to design and build for energy efficiency, in easy-to-understand language with many practical illustrations.

Much of your job will be consumer education — explaining to clients what the various building practices will do for them, and helping them see why your quality-built homes offer the best buy for their money. This book will help you do that. If you want to sell more houses and make more money in today's energy-conscious world, you should read the entire book, cover-to-cover. If your only purpose in picking up this book is for information on a specific subject, the following paragraphs tell you how to find it.

Organization. The book's chapters are arranged in chronological order of the building process from site planning through amenities. Beginning with Chapter 3, *each chapter* provides you with:

- A list of recommended strategies, associated costs, and estimated savings.
- A section on how to market the recommended strategies.
- A section on how to carry through each recommendation. This includes product selection, sizing, and installation information.

An index at the back makes this book an easily-used reference source. Two recommendations: Copy appropriate sections of the book and take them to your job site. Copy the marketing suggestions and give them to your sales team.

Sales Approach. Do not exaggerate energy savings. Your clients may not believe you, and those who do believe you will be disappointed if their bills do not reflect the savings you projected.

The illustration opposite shows cooling and heating load sources for a standard, meet-the-code, 1500-square-foot wood frame Florida home. Use this figure to find the limits of potential savings from various practices. For example, if you merely add a radiant barrier to an insulated and vented roof, your clients will not save 30% on air conditioning costs since the roof constitutes only 12% of the air conditioning load.

Recommendation Lists. The recommendation list at the beginning of each chapter provides you with an estimate of savings for each suggested strategy. The listed savings reflect the benefit of the recommended strategy over the minimum practice required by code.

The same recommendation may appear in more than one chapter. For example, the site planning, house plan and window chapters contain recommendations for shading windows. The maximum saving from shading windows would be the largest estimated saving cited for one of the strategies, not the sum of all of them.

Also, many different strategies that affect the cooling load (or heating load) are related, so the percentage savings should not be added. Instead, use the following formula:

Total percent savings

$$= 100 \times \left[1 - \left(1 - \frac{\text{strategy A savings}}{100} \right) \times \left(1 - \frac{\text{strategy B savings}}{100} \right) \right]$$

For example, suppose you installed an attic radiant barrier (Chapter 8) and also chose a high efficiency (SEER=12.0) air conditioner (Chapter 9). The radiant barrier estimated savings is 8% and the high efficiency air conditioner is 20%.

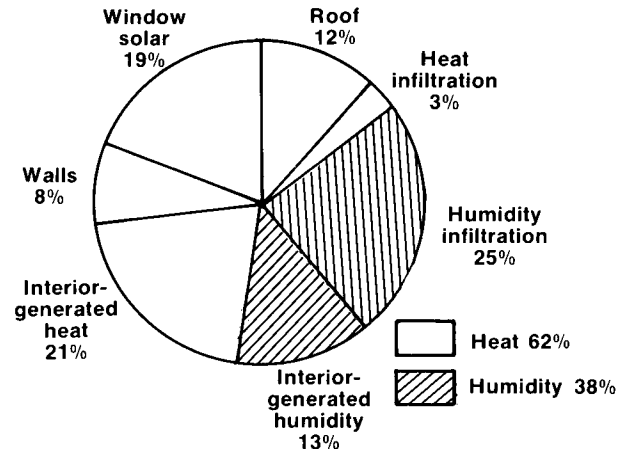
Total percent savings

$$= 100 \times \left[1 - \left(1 - \frac{8}{100} \right) \times \left(1 - \frac{20}{100} \right) \right]$$

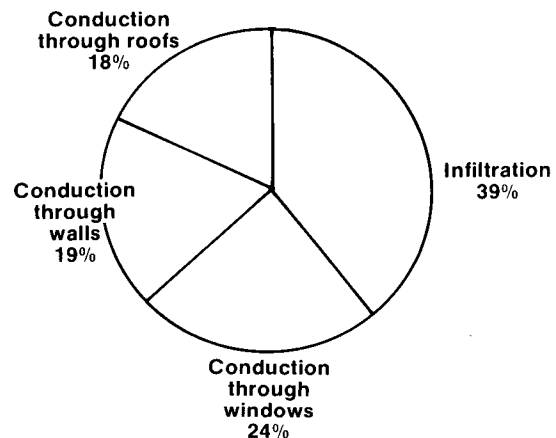
$$= 100 \times [1 - (.92) \times (.80)]$$

$$= 100 \times [1 - .74] = 100 \times .26 = 26$$

Total savings would be 26%, not the 28% you would get if you added the two numbers.



Air conditioning load sources.



Heater load sources.

In the case of natural ventilation enhancement, the savings can increase when combined with other measures. The recommendation lists cite savings (20%) for natural ventilation enhancement that are representative of typical new homes. However, in particularly well-insulated homes that include mass features (see Chapter 4) and ceiling fans, ventilation savings can increase to 40%.

Your Location and Perspective. Although most Florida homes have fairly large cooling needs, the amount of heating they require differs substantially from North to South Florida. Because of this, some building strategies described in this book are more appropriate for certain sections of the state (see map below).

Furthermore, you may find that not all recommendations in this book apply to what you are building. Such factors as the specific site, deed restrictions, local availability of products, and your completion schedule may make some recommendations impractical. However, it is likely that you will find most of the recommendations easy to apply to your present or future homes — particularly if you plan early to include them.

3. Priority checklists

The following are quick checklists of recommended energy-efficient building practices based on factors that concern you the most: initial cost, installation/planning time, ease of selling, and long-term economics for the home owner. Each checklist recommendation is covered in detail in a later chapter. These checklists reveal that whatever your home building concerns and priorities, you can afford to build energy-efficient homes. You are left with only one question: Can you afford to build homes that are *not* energy-efficient?



Climate zones for Florida. Cities within each zone may have similar weather patterns.

Why You Should Build Energy-Efficient Houses

Strategies That Cost Less Than Alternative Building Practices

	Chapter Discussed
• Reduce window area.	4,7
• Have simple building shapes.	4
• Choose slab-on-grade foundation.	5
• Reduce the number of framing members.	6
• Properly size the air conditioner.	9
• Locate water heater and laundry in nonconditioned space.	10
• Do not use skylights, fireplaces, pools or spas.	11

Strategies That Cost About the Same as Alternative Building Practices

	Chapter Discussed
• Plan site to minimize watering requirements.	3
• Plan site layout to maximize breezes.	3
• Have long axis east-west (long sides face north and south).	4
• Have at least half of glass on south side (Central, North Florida); consider south-facing clerestory windows.	4
• Have major rooms (kitchen, dining, family, master bedroom) cross-ventilated.	4
• Have morning rooms on west side, afternoon rooms on the east, living areas on north or south (time-of-day-layout).	4
• Run ductwork between floors in 2-story home.	5,9
• Vent crawl space.	5
• Use white or light-colored exterior wall colors (especially east and west walls).	6
• Use light-colored shingles and roofs.	8

Strategies That Are the Easiest to Sell

	Chapter Discussed
• Leaving mature shade trees on site.	3
• Avoid east and west windows.	3,4
• Providing porches.	4,11
• Time-of-day layout.	4
• Tile floors.	5
• Added attic insulation.	8
• Attic radiant barriers.	8
• High efficiency air conditioners.	9
• Timer controls on bath and kitchen exhaust fans.	9
• Ceiling fans.	9
• Whole house fans.	9
• Efficient water heaters.	10
• Water-saving bathroom fixtures.	10
• Built-in microwave ovens or shelf for microwave.	11
• Outdoor cooking areas.	11

Strategies That Have the Least Time or Labor Associated with Them

	Chapter Discussed
• Use light colored exterior wall paint.	6
• Choose reduced transmittance glass products.	7
• Choose insulated glass where cost-effective.	7
• Use light-colored shingles and roofs.	8
• Insulate the attic to R-30 instead of R-19.	8
• Choose high efficiency air conditioners.	9
• Choose efficient water heaters.	10
• Choose efficient kitchen and laundry appliances.	10
• Use efficient lighting.	10
• Install water-saving bathroom fixtures.	10

Why You Should Build Energy-Efficient Houses

Strategies That Have the Greatest Rate of Return on Initial Investment*

	Rate of Return on Investment (%)
Low-flow showerheads	169
High efficiency outdoor lighting	130
Natural gas water heating	70
Natural gas clothes dryer	66
Natural gas heating or heat pump in N. Florida	60
Insulated hot water lines	45
High efficiency refrigerator	40
Super-insulated water tank	36
Natural gas heating or heat pump in C. Florida	35
High efficiency indoor lighting	26
High SEER air-conditioner	24
Natural gas range/oven	24
Ceiling fans	23
Attic radiant barrier (with R-19 insulation)	20
R-30 ceiling insulation	20

Strategies That Have the Greatest Net First Year Cash Flow* (Energy Savings - Mortgage Cost - Maintenance costs)

	Net First-Year Cash Flow \$/Year
Natural gas heating or heat pump in N. Florida	130
Natural gas water heating	91
High SEER air conditioner in S. Florida	80
Ceiling fans in S. Florida	73
Natural gas heating or heat pump in C. Florida	60
Natural gas clothes dryer	50
Low-flow showerheads	39
High SEER air conditioner in C. Florida	38
High efficiency outdoor lighting	32
Ceiling fans in C. Florida	32
High SEER air conditioner in N. Florida	24
Ceiling fans in N. Florida	22
Insulated hot water lines	21

* Items that cost less than or the same as alternatives should be considered first (see page 1-4). This table shows only items that have definable initial cost. See Appendix A for definitions and analysis.