



Improve Your Home and Prosper

Include energy-saving, hazard-hardy upgrades

Money isn't all you're saving!

When you save energy and prevent damage to your home, you're not just saving money. *You're helping the environment and our nation.* While making a wise investment, you also can feel good about reducing America's need for foreign energy resources, conserving nonrenewable natural resources for future generations and reducing pollution.

Much of the energy used in homes is produced by power plants that burn fossil fuels such as coal, oil or natural gas. They produce air pollution that can contribute to smog, acid rain and respiratory illnesses. In fact, the energy used by the average home accounts for more air pollution than the average car! Choosing energy-efficient products for your home is one of the best ways you can do your part to improve the environment. Using energy-efficient products instead of standard ones can result in a reduction of carbon dioxide emissions equal to taking a car off the road for seven years.

A durable home that withstands natural hazards saves money, time, the ordeal of making repairs and potentially even your health. Hidden water damage can lead to the growth of unhealthful molds. Durable buildings help communities and the nation by reducing disaster costs. They help the environment, too, by reducing waste.

Rising energy prices, floods and hurricanes happen, but they don't have to bust your budget, damage your home, rob your time or deny your comfort. *You can take control of your future by including both energy-saving and hazard-resistant improvements when you remodel or restore your home.* In the big picture, energy efficiency and durability don't cost you. You prosper every day you own the home – in several ways.

The right home improvement investments can return:

- Lower energy bills
- Greater comfort
- Higher quality
- Less damage, expense and ordeal after storms and floods
- Less maintenance
- Environmental benefits

Here are some smart investments to improve your southern region home and to prosper:

Lighten Up

On the outside

When repainting, re-siding or re-roofing your home, *choose light colors.* Among roofing options, a white painted metal or tile roof can make a big difference in cutting heat gain and saving cooling costs.

A new technology to consider is "cool color" shingle or metal roofing coated with special high-tech pigments that make darker colors reflect heat like lighter colors. Look for the Energy Star label when shopping for energy-saving roofing materials.

Light-colored siding may not offer as much benefit as heat reflective roofing, but color choice also is a no-cost way to reduce heat gain through walls.

On the inside

Light-colored interiors (another no-cost strategy) reflect light, minimizing the amount of artificial light needed. Dark colors absorb light, so you'll need to use more lighting. That costs you not only the direct wattage of the lights but also the extra air conditioning needed to remove the heat they produce.



Choose Appliances and Lighting That Pay Back

In general, each three kilowatt-hours of energy saved in the home reduces the energy needed for cooling by an additional kwh. So when you buy energy-efficient appliances and lighting, you save energy and money two ways and increase your home's comfort and convenience.

Labels that make it easy

When replacing appliances, electronics, lighting fixtures and other products, look for models with the *Energy Star label*, a verification of high energy-efficiency. Also, use the big yellow *EnergyGuide labels* on appliances to reveal the hidden costs (operating costs) and compare models. Even though the purchase price may be a little higher, investing in higher efficiency will pay off over the life of the equipment – usually several times over.



Water heating typically is the second biggest energy user, after cooling and heating, so invest in the highest efficiency water heater you can afford and choose water-efficient appliances. High-efficiency refrigerators and freezers are especially important, too, since they run all day, every day of the year. When buying a large screen TV, note that plasma screens are big power users and generate more heat than other types.

Room Air Conditioner
Capacity: 9500 BTU/hr

(Name of Corporation)
Model(s) XXXXXX

ENERGYGUIDE

Models with the most efficient energy rating number use less energy and cost less to operate.

Models with 9300 to 9799 BTU's cool about the same space.

Least efficient model **5.7**

6.1 THIS MODEL

Most efficient model **10.2**

Energy Efficiency Rating (EER)

This energy rating is based on U.S. Government standard tests.

How much will this model cost you to run yearly?

| | Yearly hours of use | Estimated yearly \$ cost shown below | | | | |
|------------------------|---------------------|--------------------------------------|-------|-------|-------|-------|
| | | 250 | 750 | 1000 | 2000 | 3000 |
| Cost per kilowatt hour | 2¢ | \$8 | \$23 | \$31 | \$62 | \$94 |
| | 4¢ | \$16 | \$47 | \$62 | \$125 | \$187 |
| | 6¢ | \$23 | \$70 | \$94 | \$187 | \$281 |
| | 8¢ | \$31 | \$94 | \$125 | \$250 | \$374 |
| | 10¢ | \$39 | \$117 | \$156 | \$312 | \$468 |
| | 12¢ | \$47 | \$140 | \$187 | \$374 | \$562 |

Important: Removal of this label before consumer purchase is a violation of federal law (42 USC 6302)

EnergyGuide label

For flood hazard areas

Try to choose appliances that can be installed above the likely flood level. A front loading washer on a built-in drawer has multiple advantages: energy and water conservation, a more convenient height, protection from low-level flooding, storage space and accessibility from a wheelchair. A separate wall oven and cooktop are convenient and high above the floor. Install a new energy-efficient water heater on a raised platform, or consider switching to an energy-saving gas, tankless water heater mounted on an outside wall above flood level.



Compact fluorescent lamps

Advancements in lighting

When replacing or adding *new lighting fixtures* (both indoors and outdoors), choose from the many attractive residential styles of fluorescent, LED or other high-efficiency Energy Star fixtures. *Fluorescent lamps* now are available that produce a natural, appealing light. (Look for a CRI rating over 0.80 and a warm color or CCT of 2,700 to 3,000 K.) Outdoor fluorescent fixtures are made to withstand wet and cold weather. You can even get dimmable and multi-level fluorescents.

Likewise, replace your high-use incandescent light bulbs in existing fixtures with screw-in Energy Star labeled *compact fluorescent lamps*. The newer electronic types do not flicker or hum and come in many shapes and sizes to fit almost any fixture.

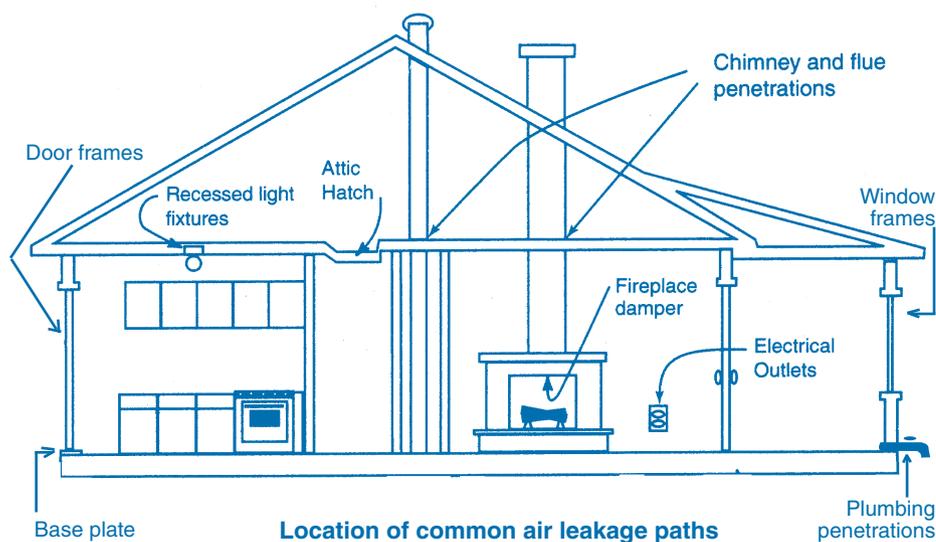
Fluorescents have a little higher price tag but use about a quarter the electricity, produce a quarter the heat and can last up to 10 times longer. So you end up paying much less during the life of the lamp and stay cooler, too. LEDs are a rapidly evolving technology. Energy Star LEDs are more expensive than fluorescents but last much longer and offer similar energy and heat savings.

Seek and Seal Leaks

Installing outlet and switch *gaskets*, expanding *foam sealants*, *weatherstripping*, door *thresholds* and *caulk* are inexpensive, do-it-yourself projects that can give you many benefits – energy (and money) savings, increased comfort, lower indoor humidity, fewer pests (insects and mice), less pollen and protection from wind-driven water leaks. Look beyond just window and door leaks. Find and seal interior gaps around plumbing, pull-down stairs to the attic, ceiling fixtures, dropped ceilings and the fireplace chimney (using fire code

compliant products), as well as at the base plates and any other sources of air leaks.

Recessed can light fixtures that are not *ICAT rated* (insulation contact, airtight) are like turbo-charged air leaks. These fixtures should be either properly covered with airtight boxes in the attic (that meet fire code provisions) or replaced or fitted with ICAT types and sealed at the ceiling. For more detail and pictures of how to air seal effectively, visit www.energystar.gov and select *Home Improvement*.



Go Duct Hunting – For Leaks

If your home is typical, your central air ductwork may be losing from 30 percent to 50 percent of the cooling and heating you pay for. That's because most duct systems are quite leaky, and the ductwork is located in one of the hottest places on earth (an attic). All joints and connections in the duct system and air handler should be *sealed with UL 181 mastic* (a gooey paste) with fiberglass mesh (*never duct tape* because it quickly fails), and the boots at vents should be sealed to the drywall. Ducts should be supported with straps and have no kinks. Any ducts in an unconditioned space (like a vented attic) also should be insulated to R-8 or more. Ideally, ductwork should be tested by a trained professional with specialized equipment that can measure the amount of air leakage and locate leaks.



Seal air ducts with mastic

Increase A/C SEER, Not Size

When it's time to replace your air conditioner or heat pump, look for the Energy Star label, and don't settle for less. Compare the *SEER or EER* (energy-efficiency ratios). The higher the number, the more energy efficient. Also, ask to see documentation that the system has a moisture-removing ability (latent capacity) of at least 25 percent of total capacity to provide good *humidity control* in our humid climate. (That's especially important if buying a high SEER system, because some increase efficiency by reducing capacity to dehumidify.)

Insist the system *NOT be oversized* (number of tons). Bigger is not better! An oversized air-conditioning system will cool too quickly (short cycle), so it will not dehumidify adequately, will cost more to buy and operate and will not last as long. Ask the contractor for a *Manual J* calculation of cooling load, rather than a rule-of-thumb estimate based on square footage alone – especially if you are making other energy-saving improvements.

Compressor tips

Be aware that outside (compressor) and inside (evaporator) units that are not matched, or incorrectly charged, will not achieve the rated efficiency. It's also important to maintain plenty of clearance for air flow all around and over the compressor and to keep it clean. In flood hazard areas, install the outside unit on a sturdy platform or elevated concrete pad above flood levels.

Look Overhead

It's R-value, not inches, that counts

Where space permits, *increase attic insulation to R-38*. Check package labels to compare R-values, since different types of insulation vary in R-value per inch. If using loose-fill insulation, be sure the installer calculates and uses the number of bags needed based on the label and does not fluff the insulation to achieve a given thickness with less material. If adding batts, use unfaced batts in perpendicular layers to provide full coverage with no gaps. Also, make sure the insulation is in full contact with an air barrier surface; fibrous insulations do not stop air leaks.

Caution: In a vented attic, be sure insulation does not block the air flow from the soffit vents. Do not cover recessed can lights with insulation unless they are IC rated.

If your air-conditioning unit and ductwork are in the attic or you cannot insulate the attic floor to R-30, consider stapling a *radiant barrier* sheet material to the underside of the roof rafters, shiny side facing down. Radiant barriers (a foil-faced material) block heat that radiates from hot roofs, keeping the attic, ducts and attic insulation cooler. It does not need to be sealed and can be installed by a do-it-yourselfer, but there must be air space on the shiny side for it to work.

When your air conditioning and ducts are in the attic (especially if not sealed with mastic and well insulated), the ceilings (attic floor) are leaky and hard to remedy and there are no combustion appliances (gas furnace or water heater) in the attic, another alternative solution is conversion to an *unvented attic system*. Properly done, an unvented attic moves the insulation and air barrier boundary from the ceiling to the roof line, which makes the attic a semi-conditioned (indoor)

space. This can save a lot of energy by eliminating energy loss to the outdoors from leaky ceilings and ductwork in the attic.

Conversion to an unvented attic is a major undertaking, however, and it must be done correctly to avoid moisture or air quality problems. It involves removal of the attic floor insulation, sealing attic vents, blocking the soffit vents or gaps between the knee wall and roof decking so the attic is completely sealed from outside air and then insulating under the roof decking with spray foam insulation.

Unvented attics can affect the life of dark shingles or lead to buckling, but this can be avoided with synthetic roofing underlayment (with a low perm rating) and light colored shingles or metal or tile roofing. In addition, no combustion appliances (other than special *direct vent, sealed combustion* types) should be located in an unvented attic. For more in-depth information, visit www.buildingscience.com.

Water and Wind Worries

Exhaust fans are needed in bathrooms and the kitchen to remove moisture. These should be connected to ducts to the outside so they don't dump moist air into the attic space where it could condense and wet the insulation.

An added advantage of an unvented attic system is that it eliminates risk of water damage from wind driven rain through *attic and soffit vents*. When you have a vented attic, a hurricane rated ridge vent combined with sturdy soffit vents attached to the framing of the roof overhang are preferred.

Never combine a ridge vent with a power vent, turbine or gable vent since that could lead to reverse airflow and water intrusion. Attic power vents consume energy, and, even more, can significantly increase ceiling and ductwork air leaks by causing a negative pressure in the attic. This can result in poor air quality and higher cooling costs, despite having a cooler attic, because the attic is being partially cooled by your air conditioner.

When re-roofing, investigate the *water, wind and hail resistance ratings* of the new roof system. Consider a class H wind rating and UL Class 4 impact rating for highest performance. Remove the old roof coverings, inspect roof sheathing



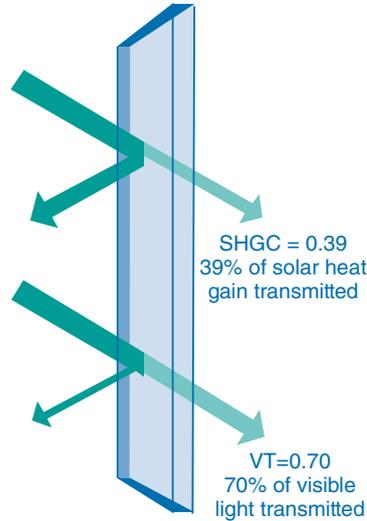
Hurricane tie

and install hurricane clips/straps to connect roof rafters/trusses to side walls (especially for gable end walls). Consider using a double layer of roofing felt, one layer of tear resistant synthetic underlayment or an adhesive backed waterproofing membrane underlayment. Ensure the roofing is installed based on the manufacturer's high wind installation instructions.

Be Wise With Windows

The numbers that matter

When you add or replace windows, choose *insulated glass* (two glazings with a dead air space) with a *low solar heat gain coefficient* (*SHGC of 0.27 or lower*, the lower the better) on a National Fenestration Rating Council label. The solar heat gain coefficient rating, which measures the amount of solar heat that a window will admit, is most important in this climate. Sun control is your goal in a southern climate.



Southern climate low-e glass

Look Below and Within

When restoring or adding *walls and floors*, seize the opportunity to upgrade wall (and crawl space) insulation levels to *R-13 to R-19* and to choose more durable materials. To resist flood damage, consider creating drainable, flushable walls with closed cell foam insulation (spray or rigid) in the lower wall cavities. For subfloors, closed cell spray foam or foil faced rigid foam panel insulation systems are recommended to minimize risk of subfloor moisture problems. For more information, see *Insulating Raised Floors in Hot, Humid Climates* at www.LSUAgCenter.com (in Publications section).

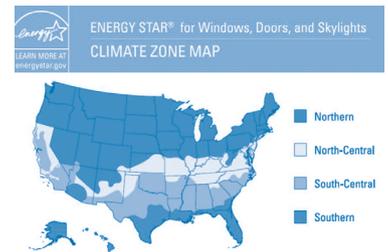
When remodeling, choose materials that can resist damage from flooding, termites and other possible hazards. Consider porcelain or ceramic tile or brick with waterproof mortar, solid vinyl flooring with chemical-set adhesives, decorative concrete, pressure-treated wood, fiber cement and other durable flooring, wall finishes and siding. Find FEMA-tested flood-resistant materials at www.fema.gov.

It's also important for a window unit to be airtight and resist heat flow through its materials. A *U-value* (also called U-factor) of 0.60 is adequate in the deep southern climate zone, but lower is better, and 0.35 or lower is recommended (the lower the better) in the south-central climate zone with its longer and colder winter season. Keep in mind that to perform as rated a window unit must be installed and sealed properly to be airtight in the opening. In addition, make sure proper window flashing is in place to protect framing from water leaks.

To retain the benefits of daylight, look for a *visible light transmittance* (VT) of 0.5 or higher. The lower the solar heat gain coefficient and the higher the visible light transmittance, the better. Today's "spectrally selective" low-e windows make it possible to

have it all – plenty of light without all the heat that would normally come with it.

The easiest way to identify new energy-saving windows for your home is to look for the Energy Star label for your geographic location. Windows with the Energy Star label have been certified by the National Fenestration Rating Council to meet the current Energy Star standards for the climate zone. Windows without such a label or windows that are rated for other climate zones may not be as good an investment.



EnergyStar southern climate label

If you're keeping your existing windows, similar sun control benefits can be achieved by installing spectrally selective *solar film* (look for the same solar heat gain coefficient and visible light transmittance ratings). Low-cost alternatives that are also easy for do-it-yourselfers to install are full window *solar screens*. These screens have a tight weave that blocks about 70 percent of the solar heat (and light), but not the view, and they can be removed in winter. Solar screens also serve as insect screens and increase privacy.

Did you know?

The greatest damage to noncoastal homes from hurricanes typically is caused by water entry and uneven air pressure loads when windows break. Hurricane winds, which often are greater than 100 miles per hour, can turn unanchored items into missiles – and that can be just the beginning!

| | | | |
|---|--|-----------------------------|-----------------------------|
| National Fenestration Rating Council CERTIFIED | World's Best Window Co. Millennium 2000+ Casement CPD#0098-xyz-001 Vinyl-Clad Wood Frame Double Glaze Argon Fill Low-E = Solar Control Coatings | | |
| | ENERGY PERFORMANCE | | |
| Energy savings will depend on your specific climate, house and lifestyle For more information, call 1-800-NFW-1234 or visit NFRCC's web site at www.nfrc.org | | | |
| Technical Information | | | |
| Res | U-Factor | Solar Heat Gain Coefficient | Visible Light Transmittance |
| Non Res | .32 | .38 | .58 |
| | .31 | .40 | .60 |
| <small>Manufacturer stipulates that these ratings conform to applicable NFRCC procedures for determining whole product energy performance. NFRCC ratings are determined for a fixed set of environmental conditions and specific product sizes.</small> | | | |

Most homes destroyed during recent hurricanes had no window protection. When wind enters a home through broken windows, the pressure can build inside the home and lift the roof and collapse walls.

Operable *hurricane shutters* can protect glass from flying debris while providing an appealing design element to your home. Louvered Bahamas shutters (hinged above the window) that are impact rated offer the triple benefit of storm protection, decoration and the energy savings of an awning-like shade that preserves the view. There also are plantation-style, side-hinged hurricane shutters that can be closed for a storm; convenient



Bahama shutters

roll-down storm shutters that hide in a cornice until needed; more-affordable accordion storm shutters; *impact screens* that also provide shade like a solar screen; and translucent *removable storm panels* that can be quickly mounted before a storm in pre-installed tracks.

Laminated, *impact-resistant windows* are an alternative to storm shutters, and they are available with Energy Star labels and performance features. They offer the added advantages of being storm-ready at all times (such as when no one is home) and home security benefits. Proper installation according to manufacturer instructions is essential, however.

For windows in flood hazard locations

Consider good-quality, Energy Star-rated windows made with fiberglass, vinyl or metal frames with a thermal break. They tend to be moderate in price, low maintenance and energy efficient and may suffer less damage in a flood than wood-framed units.

HERS Can Help You Save!

A trained energy auditor using home energy rating system software, also called HERS, can analyze your home's energy performance to determine the most effective combination of energy-saving improvements. An energy rating can serve as a financial decision-making tool to help you select what can yield the most energy savings from your investment. Likewise, hiring a "third party" professional to do key inspections of proper installation and to repeat performance testing after the improvements (such as blower door, duct leak tests and infrared camera inspections) helps to ensure you really get what you're paying for.

Check into energy efficiency incentive programs that may be available to you, their requirements and benefits by visiting www.dsireusa.org. This site lists both federal and state tax credits and other programs designed to encourage energy efficiency.

Learn more

These are just some of the ways to improve your home and prosper – from lower energy costs, lower damage costs, greater comfort and higher value. There are many more. To learn more about getting the most from your housing investment, visit these websites:
www.LSUAgCenter.com/LaHouse
– LaHouse Home and Landscape Resource Center
www.eXtension.org/home_energy
– eXtension's Home Energy section
www.energystar.gov
– U.S. Environmental Protection Agency's Energy Star information
www.eere.energy.gov
– U.S. Department of Energy's Energy Efficiency and Renewable Energy site
www.flash.org
– Federal Alliance for Safe Homes
www.disastersafety.org
– Insurance Institute for Business and Home Safety

See and learn more about the advantages of a high performance home and how to achieve them. Visit **LaHouse Resource Center** in Baton Rouge, La. or on the web, Facebook and Pinterest.

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