

Alabama Energy Code Guide



for The Construction Industry

The State of Alabama is implementing new energy conservation code requirements to ensure that all new homes meet or exceed national minimum standards.

When home buyers learn that national minimum energy standards for homes exist, they assume those standards are being met in their communities. These minimum standards aren't "ENERGY STAR" or "green" homes; they simply establish the bare minimums that should be included in all homes today.

Energy codes save money and resources, but they also improve the quality of homes. When builders understand code requirements and address these important details, it's a good indication of quality construction. Homes built that comply with energy codes are often more affordable to heat and cool and comfortable to live in.

- It is much easier for builders to stay up-to-date with code requirements when they are uniform statewide. Often, builders have projects in multiple jurisdictions, so when all jurisdictions are implementing the same codes, it's much easier to ensure they are building in compliance with the codes. This makes it easier to avoid potential liability for not complying with requirements that vary from place to place.
- Complying with the energy code can make homes more comfortable. Energy code requirements, such as those for insulation and sealing air leaks, are based on building science that represents good practice, and are updated regularly. Better comfort means happier home buyers and fewer callbacks for you – that improves your bottom line!
- Energy code requirements address energy and air quality concerns. It's no secret that energy codes help save homeowners money in heating and cooling their homes, but they also help improve indoor air quality. Performing whole-house air sealing (and, better yet, air leakage testing) results in homes that are not only more energy efficient, but also have fewer of the building pressurization issues that lead to moisture, mold, and other air quality problems.
- Duct sealing requirements in the energy codes also help reduce utility bills and improve comfort while reducing the potential for HVAC exhaust backdrafting that can lead to carbon monoxide poisoning.
- Energy code compliance reduces repairs and improves durability. For example, meeting proper HVAC system sizing and design requirements not only saves energy and improves indoor air quality, but also ensures that the equipment works properly and is less likely to experience malfunctions, such as compressor burn-out or system freezing and poor comfort levels.

Alabama Energy Code Guide

for The Construction Industry



While not a complete list, below are a few of the new energy code requirements for homes:

Energy-Efficient Lighting. Lighting has an enormous impact - approximately 12 percent- on the energy use in homes. Regular (incandescent) light bulbs heat up homes in the summer and raise air conditioning costs. The energy code requires that builders use high efficiency light bulbs (such as compact fluorescents, high-efficiency halogens, LEDs, etc.) in at least 50 percent of the permanent lighting fixtures in new homes.

Windows. Windows may be responsible for 18-20 percent of energy loss in a home. Energy code requirements specify a U-factor for windows and skylights. A U-factor is a rating that indicates how much heat loss the window allows. U-factors generally range from 0.2 (very little heat loss) to 1.2 (high heat loss). Single-paned windows are about 1.0, double-paned windows about 0.5 and high-performance double-paned windows are about 0.3. Skylights and windows must meet separate U-factors. The solar heat gain coefficient measures how well a window blocks heat from the sun. This is especially important in warm regions like Alabama.

U-factors Required in Alabama			
	Window U-factor	Skylight U-factor	Solar Heat Gain Coefficient
Baldwin & Mobile Counties	0.65	0.75	0.30
All Other Counties	0.50	0.65	0.30

Builders should retain window labels or stickers to verify the U-factor for new windows and skylights for potential home buyers. This paperwork can be provided to the homeowner along with other warranty information for appliances and the HVAC system.

To learn more about window technology and benefits, please visit the Efficient Windows Collaborative web site: http://www.efficientwindows.org/code_overview.cfm

Check the access hatches/doors for attics. These can be a major source of air leakage in the home, creating high utility bills and sending cool air up to the roof in the summer. Hatches/doors to the attic should be weather-stripped and insulated. They should be well-made so that they are airtight. The insulation should be attached so that it isn't damaged or become loose when the hatch or door is used. Test the air tightness by closing door or hatch on a piece of paper. Can the paper be easily pulled out when the hatch/door is closed? If yes, the door/hatch is not airtight and should be fixed.



Insulated attic hatch and insulated ducts

Energy Certificate (Voluntary). Builders may attach a certificate on or near the electrical distribution panel listing materials, equipment values, and ratings to demonstrate that the home meets the energy conservation code requirements. While this requirement is voluntary in Alabama, the certificate is an important way for builders to highlight the quality of the home while offering consumers a way to verify that the home meets code requirements. The certificate should not obstruct the visibility of the circuit directory label, service disconnect label, or other required labels. Examples of completed energy certificate can be found on Alabama Department of Economic and Community Affairs' web site, www.adeca.alabama.gov/C0/codes

Alabama Energy Code Guide

for The Construction Industry



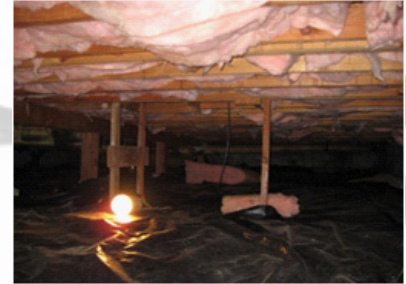
- Crawl space Insulation.** Look under the house. Either A.) the floor over the crawl space should be insulated or B.) (preferred) the crawl space walls should be insulated and the crawl space should not be vented. Insulation should be attached properly without gaps and without being squeezed or compressed.



Crawl space vent



Proper installation (no vent)



An example of improper installation

- Seal all air leaks into and out of the home.** Air leakage is responsible for 30% or more of the energy loss in homes. Plus, air leakage/infiltration creates moisture and mold problems. All joints and seams must be sealed along with penetrations between the inside and outside of the home. Typically, caulk, spray foam or weatherstripping is used to seal air leaks. The following are examples of areas that must be sealed properly to prevent airflow and allow for seasonal expansion and contraction of materials:

- Joints, seams, and penetrations
- Site-built windows, doors, and skylights
- Openings between window and door assemblies and their respective jambs and framing
- Utility penetrations
- Dropped ceilings or chases adjacent to the thermal envelope
- Knee walls
- Walls and ceilings separating the garage from conditioned spaces
- Behind tubs and showers on exterior walls
- Common walls between dwelling units
- Attic access openings
- Rim joist junctions
- Other sources of air infiltration/leakage

For more information on air leakage from the home, please visit:

<http://www.pacificnorthwestinspections.com/index.php/resource-library/online-resources/914-hvac/275-stackeffect>

- Fireplaces.** The energy code requires that the doors of a wood-burning fireplaces have gaskets.



A fireplace with door gaskets

Alabama Energy Code Guide for The Construction Industry



□ Ductwork must be sealed and insulated -- and testing may be required.

- Unless the attic ceiling and walls are insulated, when ductwork runs through attic space, it must be insulated to a minimum of R-6. *As of July 1, 2013, the insulation requirement increases to R-8.*
- All ducts and air handlers must be sealed with mastic.
- As of July 1, 2013, the code requires that the entire duct system be tested for air tightness if any part of the ductwork is located in an un-insulated crawlspace, attic, or garage. Leaky ducts are a major source of energy loss which means that this requirement is extremely valuable to homeowners in making homeownership affordable, month after month. If you have ductwork in the crawlspace, attic or garage, after July 2013, have the duct pressure tested and share the results with the homeowner/buyer to validate the quality of the home.



This duct has been sealed but not insulated

□ Checking air leakage - was a blower door test done? One way that home builders can demonstrate that they've sealed air leaks in a new home is to have a "blower door" test done.



Blower door test

NOTE: The code requires new homes to be tested with blower doors, unless the air sealing in the home was inspected by a qualified and independent professional. Having a home professionally inspected and/or tested is an important safeguard for consumers to ensure that the home meets minimum energy code requirements. Builders can use blower door tests to verify the quality of the home. According to the code, tested air leakage must be less than "seven air changes per hour (ACH) when measured with a blower door at a pressure of 33.5psf (50Pa)". To standardize the test for different homes, the equipment used for the test is set at a standardized pressure level (33.5psf or 50Pa). Very efficient homes may have leakage rates of only .6-2.5 with a pressure of 50Pa.

For more information on blower door testing, please visit:
<http://www.greenbuildingadvisor.com/blogs/dept/musings/blower-door-basics>

□ Insulation certificate requirement. Properly installed insulation is critically important for making a home comfortable and affordable, yet insulation is also where homes are often short-changed. The energy code provides added protection for home buyers whenever insulation is blown or sprayed into walls and ceilings. Builders must provide a certificate listing the type, manufacturer, and R-value of the insulation. Depending on the type of insulation used, the installer must provide additional information such as number of bags installed, coverage area, and thickness of the insulation after it has settled. The insulation installer (for blown or sprayed insulation) must sign, date, and post the certificate on the job site.

Insulation Requirements that Apply in Alabama			
	Ceiling R-value	Wood Frame Wall R-value	Floor R-value
Baldwin & Mobile Counties	30	13	13
All Other Counties	30	13	19