

HOME ENERGY CODE GUIDE:

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YOUR
ENERGY
RIGHTS

A Consumer Guide to Minimum Standards for Energy Efficiency

If you are interested in purchasing a quality home—or want to learn more about how to make your home more energy-efficient—this checklist provides a quick way to assess home energy performance. The list below includes information on national minimum energy standards, based on the 2009 International Energy Conservation Code.

When builders meet or exceed these requirements and pay attention to these important details, it's a good indication of the quality of construction and an indicator of whether the home will use energy efficiently. Energy efficient homes are more comfortable, cost less to operate, and pollute less.

This checklist doesn't cover every aspect of the energy code, but it addresses the requirements that are easiest to understand and see in a home after construction is complete. With the information below, a consumer can determine whether a new home likely meets the energy conservation code, and what upgrades may be needed for renovations of existing homes.

ENERGY EFFICIENT LIGHTING

Lighting has an enormous impact (approximately 12%) on the energy use in homes. The energy conservation code requires that the builder put high efficiency light bulbs in at least 50 percent of the lighting fixtures that are hardwired into the home. Some examples of hardwired fixtures include lighting in kitchens and bathrooms, recessed lighting, hallway lights, and exterior lights next to the front door and garage door. High efficiency bulbs can include compact fluorescents, high-efficiency halogens, LEDs, etc. If the bulbs look like standard incandescent bulbs, ask the builder whether the energy efficiency lighting requirement has been met.



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PROGRAMMABLE THERMOSTAT



Programmable thermostats can generate annual energy savings of 10%. A home with a forced-air furnace heating system must have a programmable thermostat installed, but they are a good idea in almost any home.

CERTIFICATE REQUIREMENT

Builders must attach a permanent certificate on or in the circuit breaker box or electric panel box that lists the materials, equipment values and ratings to demonstrate that the home meets energy conservation code requirements. The certificate is an important means of verifying that the home meets model code requirements. The certificate should not obstruct the visibility of the circuit directory label, service disconnect label or other required labels.

WINDOWS

Energy code requirements for windows, like many other parts of a house, vary from one region of the country to another. Requirements for windows include a U-factor and (sometimes) a solar heat gain coefficient. A U-factor is a rating given to a window based on how much heat loss it allows. U-factors generally range from 0.2 (very little heat loss) to 1.2 (high heat loss). Single-pane windows have U-factor of about 1.0, double-paned windows about 0.5 and high-performance double-paned windows about 0.3. Skylights and windows must meet separate U-factors. The solar heat gain coefficient (SHGC) measures how well a window blocks heat from the sun. This is especially important in warm regions.



2009 RECA Energy Certificate		
Counties other than Mobile and Baldwin		
Compliance Method	Date	
PREScriptive	5/1/2011	
Insulation		
Ceiling/Roof	R-value	
Walls	30	
Floors	13	
Ducts	19	
Basement Walls	5/13	
Window and Door Ratings		
Windows	U-factor	
Skylights	• 50	
SHGC	• 65	
HVAC Equipment	• 30	
Heating	Type	Rating
Air Conditioning	GAS BOILER	75% AFUE
Water Heating	FORCED AIR	SEER-13
Water Heater	Type	EF value
	50 GAL GAS	• 60
General Contractor:	RJS CONTRACTORS	
Insulation Contractor:	SMITH & SON INSULATION	
HVAC Contractor:	JDE'S HEATING & COOLING	
Form Completed By:	JA	

Visit: http://www.efficientwindows.org/code_overview.cfm to determine the U-factor and solar heat gain coefficient (SHGC) requirements for your area.

- ☐ Ask for documentation on the U-factor and solar heat gain coefficient (SHGC) for windows and skylights, such as copies of window labels to confirm requirements are met.
- ☐ Some manufacturers label their windows with serial numbers or other data that can be used to track down information on the efficiency rating. Look for trademarks and codes etched into the corner of the window glass and/or paper or metal labels that may be attached to the window sill, header, or tracks on the sides. If the builder can't provide documentation, contact the customer service department of the window manufacturer to confirm the efficiency of the product installed.



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INSULATION:

ATTIC DOOR

Check the attic access hatch /door. These can be a major source of air leakage in the home, creating high utility bills and uncomfortable drafts. The hatch or door to the attic should be weather-stripped and insulated. They should be well-made so that they are airtight when you close them (Test by closing door or hatch on a piece of paper. Can the paper be pulled out when the hatch/door is closed?). The insulation should be attached so that it isn't damaged or become loose when the hatch or door is used.

CRAWL SPACE

Get under the house and look at the crawl space. Either the floor over the crawl space should be insulated or the crawl space walls should be insulated. Insulation should be attached securely without gaps.

AIR LEAKAGE

Look for sources of air leakage into and out of the home. Air leakage is often responsible for 30% or more of total energy loss. All joints, seams and penetrations between the inside and outside of the home should be sealed. Typically, caulk, gaskets, spray foam or weather-stripping is used to seal these air leaks.

- ☐ Check to see whether leaks have been sealed in a home by looking at where phone lines, electrical lines, plumbing and other services enter the house. Are the holes plugged with caulk or other sealants?
- ☐ What about the holes in the attic floor where pipes and ducts lead to the rooms below? Are they sealed with foam, caulk, or other materials to prevent airflow?
- ☐ Open the cabinets under the kitchen sink, under the kitchen island, under bathroom sinks, etc., and see where pipes lead to the floor below or out through walls. Are the spaces around the pipes filled with caulk, foam or other materials to prevent airflow?
- ☐ In the basement, look at exterior walls where pipes and wires lead to the outside. Are there airspaces around the pipes/wires or have they been sealed?
- ☐ Check where pipes and ducts pass up through the basement ceiling to the floor above. Are there gaps and spaces that create drafts and waste energy, or are they sealed tightly?



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WAS A BLOWER 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. Ask whether a blower door test was conducted on the home and, if so, request a copy of the results.

NOTE: The national model 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. Alternatively, tested air leakage must be less than "seven air changes per hour (ACH) when measured with a blower door at a pressure of 33.5 pounds per square foot (33.5psf) or 50 pascals (50Pa)". To standardize the test for different homes and different parts of the country, 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 air changes per hour (ACH) with a pressure of 50Pa.

For more information on blower door testing visit:

<http://www.greenbuildingadvisor.com/blogs/dept/musings/blower-door-basics>



Photo courtesy of NREL/Dennis Schroeder

FIREPLACES

Generally speaking, fireplaces often reduce the energy efficiency of a home. The national model code requires that the doors of wood-burning fireplaces have gaskets to help make them airtight.

For more information visit: <http://www.woodheat.org/maintenance>



Photo courtesy of BCAP/Robin Snyder

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DUCTWORK

Leaky ducts can be responsible for 10-30% of energy loss in a home. To avoid this, leaks should be sealed, ducts should be insulated when running through un-insulated areas and testing may be required.

- ☐ Unless the underside of the roof and attic walls are insulated, when ductwork runs through attic space, it must be insulated to a minimum of R-8. Is the attic insulated? Look at the label on the ductwork insulation – what R-level is it?
- ☐ All ducts and air handlers should also be sealed with mastic (a special type of caulk that is easily visible). Duct tape isn't sufficient.
- ☐ In addition, the code requires that the entire duct system be tested for leaks 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 there is ductwork in an uninsulated crawlspace, attic or garage, ask for a copy of the report documenting the air tightness.



DEFINITIONS

R-value. A measure of the insulating quality of a material. A higher R-value indicates a greater ability to insulate a space, preventing heat transfer through the material.

U-factor (U-value). An indicator of how well a window resists conduction heat transfer. The lower the U-value, the greater a window's resistance to conductive heat flow, and the better its insulating value.

Solar Heat Gain Coefficient (SHGC). A measure of a window's ability to block radiant heat transfer, typically from sunlight. SHGC is expressed as a number between 0 and 1. A low SHGC indicates that a window transmits low amounts of solar heat, and would keep rooms cooler on a sunny day.

This Home Energy Code Guide was produced by the Building Codes Assistance Project and Consumers Union, July 2011. Visit our Websites to download a summary Home Energy Code Checklist for the requirements described above.



Building Codes Assistance Project

www.bcap-ocean.org



Consumer Reports

www.GreenerChoices.org

www.ConsumerReports.org