

# HOME ENERGY CODE GUIDE:

KNOW  
YOUR  
ENERGY  
RIGHTS

## A Consumer Guide to Minimum Standards for Energy Efficiency in Illinois

If you are interested in purchasing a quality home or townhouse—or want to learn more about how to make your existing home more energy-efficient—this guide provides a quick way to assess home energy performance. The checklist that follows describes the minimum standards of construction practice for new homes in Illinois based on the 2012 International Energy Conservation Code (IECC) with amendments as the Illinois Energy Conservation Code. While it does not include every requirement, this checklist will help you assess your own home, and if you are in the market for a new home, make an informed decision about the quality of construction and efficiency for that new home purchase.

**Energy efficient homes are more comfortable, cost less to operate, and pollute less.**

When builders meet or exceed energy code requirements, homebuyers benefit from superior quality of construction and lower utility bills. With the information below, a consumer can determine whether a new home likely meets the energy code or what upgrades may be needed when renovating an existing home.



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## PROGRAMMABLE THERMOSTAT

Installation of a programmable thermostat often results in an annual average energy savings of up to 10%. A home with a forced-air furnace heating system must have a programmable thermostat installed. The average cost of a programmable thermostat ranges from \$30-\$50, and can often be installed by the homeowner with little effort.



## CERTIFICATE REQUIREMENT

Builders must attach a permanent certificate on or near the circuit breaker box or electric panel box that lists the materials, equipment efficiencies, insulation levels, and results of building diagnostic tests to confirm the home meets the requirements of the Illinois Energy Conservation Code. The certificate must not obstruct the visibility of the circuit directory label, service disconnect label, or other required safety labeling.

A photograph of a '2012 IECC Energy Efficiency Certificate' form. The form includes sections for Insulation Rating, Glass & Door Rating, Heating & Cooling Equipment, and Building Air Leakage and Duct Test Results. A red checkmark is visible in the top left corner of the form.

Insulation Rating	
Ceiling / Roof	R-Value
Wall	49.00
Floor / Foundation	18.30
Ductwork (unconditioned spaces):	10.00

Glass & Door Rating		
Window	U-Factor	SHGC
Door	0.31	NA

Heating & Cooling Equipment	
Heating System:	Efficiency
Cooling System:	
Water Heater:	

Building Air Leakage and Duct Test Results

Building Air Leakage Test Results

Name of Air Leakage Tester \_\_\_\_\_

Duct Tightness Test Results

Name of Duct Tester \_\_\_\_\_

Name: \_\_\_\_\_

Comments: \_\_\_\_\_

Date: \_\_\_\_\_

2012 IECC Certificate Example

## WINDOWS

In Illinois, energy code requirements for windows and doors, like many other parts of a house, vary from the southern third of the state to the northern two-thirds of the state. Requirements for windows include a U-factor and (sometimes) a solar heat gain coefficient (SHGC). 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, windows and doors must meet separate U-factors. The SHGC measures how well a window blocks heat from the sun.



Visit: [http://www.efficientwindows.org/code\\_overview.cfm](http://www.efficientwindows.org/code_overview.cfm) to determine the U-factor and SHGC requirements for your area.

- When shopping for windows doors and skylights, ask for documentation on the U-factor and SHGC information, such as copies of window labels and cut-sheets to confirm requirements are met.
- Some manufacturers label their windows with serial numbers or other data that can be used to obtain 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 cannot provide documentation, contact the customer service department of the window manufacturer to confirm the efficiency of the product(s) installed.



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## INSULATION



Photo courtesy of Owens Corning

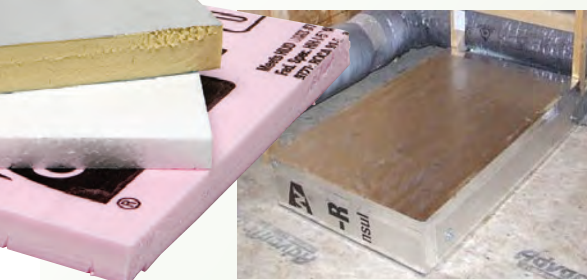


Photo courtesy of homeconstructionimprovement.com

### Crawl Space

If your home has one, take a look into the crawl space under your home. 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.

### 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 won't be damaged or become loose when the hatch or door is used.

## AIR LEAKAGE

Look for sources of air leakage into and out of the home. Air leakage is often responsible for 10-30% 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 weatherstripping 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, wires 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 places where pipes and wires lead to unheated or uncooled areas. Are these leaks sealed as well?
- Check where pipes and ducts pass up through an unheated or uncooled basement ceiling to the floor above. Are there gaps and spaces that create drafts and waste energy, or are they sealed tightly?

### WHY DO AIR LEAKS MATTER?

If a home is not properly sealed, dirt, dust, and moisture enters the home and can lead to a variety of respiratory problems including asthma and allergies. Did you know that up to 40% of the air we breathe on the first floor of our home comes from the crawlspace or basement?

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## BLOWER DOOR TEST

One way that home builders can demonstrate that they've sealed air leaks effectively in a new home is to have a "blower door" test performed by a qualified, third-party home performance contractor, approved by the local building code official. Ask whether a blower door test was conducted on the home and, if so, request a copy of the results.

**NOTE:** The Illinois Energy Conservation Code requires blower door testing for all new homes constructed in Illinois. Having a home professionally inspected and tested is an important safeguard for consumers. The tested air leakage level must be less than or equal to "five air changes per hour (5ACH) when measured with a blower door at a pressure of 50 Pascal."



Photo courtesy of NREL/Dennis Schroeder

For more information about the blower door test visit:

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



## ENERGY-EFFICIENT LIGHTING

Lighting has an enormous impact (nearly 12%) on the annual average energy use of a home. The Illinois Energy Conservation Code requires that the builder put high efficiency light bulbs in at least 75 percent of the hard-wired lighting fixtures of the home. Some examples of hardwired fixtures include lighting sockets in kitchens and bathrooms, recessed can lights, hallway and closet lighting, and exterior lighting next to the front door and garage door.

High efficiency lamps include compact fluorescent lamps (CFLs), linear fluorescent lamps, high-efficiency halogen lamps, and LED lamps. You should look for these in your new home. If the bulbs look like standard incandescent bulbs, ask the builder whether the energy efficiency lighting requirement has been met.

## FIREPLACE

Generally speaking, traditional, wood-burning fireplaces often reduce the energy efficiency of a home. The Illinois Energy Conservation Code requires tight-fitting fireplace dampers and that the doors of wood-burning fireplaces be provided with gaskets to help make them airtight when not in use.

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



Photo courtesy of BCAP/Robin Snyder (above)

Photo courtesy of Flickr/Zepfanman (right)





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## DUCTWORK

Leaky ducts can be responsible for 10-30% of energy loss in a home. To avoid this, duct leaks are to be sealed. Moreover, ducts located in unconditioned areas outside or within the building insulation layer, are to be insulated and tested for leakage.

- Unless the attic is heated and cooled, where ductwork runs through unconditioned attic spaces, it must be insulated to R-8. Look at the label on the duct insulation wrapping material – what R-level is it?
- Where a portion of the duct system serving the home is located outside (or within) the insulation layer of the home, a duct pressure test resulting in a leakage rate no greater than four cubic feet per minute (4CFM<sub>25</sub>) for every 100 square feet of conditioned floor area when tested at a pressure of 25 Pascal (1 in. w.g.) with the air handler installed, is required. The builder or HVAC contractor tests ducts for air leakage, as applicable.



Photo courtesy of [energycodes.gov](http://energycodes.gov)



## 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 or door resists heat transfer. The lower the U-value, the lower the heat transfer, and the better the insulating value.

**Solar Heat Gain Coefficient (SHGC).** A measure of a window or door's ability to block heat transfer into the home from sunlight. SHGC is expressed as a number between 0 and 1.0. A low SHGC (like 0.40) indicates a window or door that transmits low amounts of heat, and will keep rooms cooler on a sunny day.

This Illinois Home Energy Code Guide was produced by the Building Codes Assistance Project and the Consumers Union in conjunction with the Illinois Energy Office – Department of Commerce & Economic Opportunity (DCEO). Visit us online at [www.ildceo.net/energycode](http://www.ildceo.net/energycode) for more information.