Energy Provisions of the Kentucky Residential Code

Guide for Professionals

Educating building professionals on the 2007 Kentucky Residential Code (KRC).
If you are building a home in the Commonwealth of Kentucky, this checklist provides a quick overview of some of the energy requirements of the 2007 Kentucky Residential Code.

This checklist doesn’t cover every aspect of Kentucky’s energy code, but it addresses the requirements that are easiest to understand and see in a home after construction is complete. Energy-efficient homes are more comfortable, cost less to operate and reduce air pollution.
The Commonwealth of Kentucky is considering 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 minimum that should be included in all homes today.

Energy codes save money and resources, while also improving the quality of homes. When builders understand energy code requirements and address these important details, it’s a good indication of quality construction. It’s also a good indicator of whether the home will be comfortable to live in and affordable to heat and cool.

- 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.
Complying with the Kentucky Residential Energy Code

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

- **Windows — New or Remodeled Homes.** 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. The required U-factor for Kentucky is 0.40 for new windows and 0.60 for new skylights.

  - 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

- **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.

  ![](image1.jpg)

  ![](image2.jpg)

  ![](image3.jpg)

- **Ductwork should be insulated and sealed.** Leaky ducts can be responsible for 10-30% of energy loss in a home.

  - Unless the attic ceiling (underside of the roof) and walls are insulated, the code requires that when ducts run through the attic space, they must be insulated to a minimum of R-4.

  - All ducts and air handlers should be sealed with mastic (a special type of caulk that is easily visible shown to the left); duct tape is not sufficient. Either foil tape or mastic is preferred. They will stand the test of time and help reduce energy waste.

  For more information on sealing ducts, please visit: http://www.ehow.com/how_5708485_seal-duct-work.html
Heating and Air Conditioning Systems (HVAC). Improper installation of heating and air conditioning systems can waste significant amounts of energy and result in costly utility bills for the homeowner. All contractors installing HVAC systems must be:

1. must be licensed by the state
2. must apply for permits to install systems
3. must have new installations inspected

Why Do Air Leaks Matter?
If a home is not properly sealed, dust, dirt, 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 percent of the air we breathe on the first floor of our home comes from the crawlspace?

Look for sources of air leaks. Air leakage is responsible for 30% or more of the energy loss in homes. All joints, seams and holes between the inside and outside of the home must be sealed. Typically, caulk, spray foam, or weather stripping is used to seal air leaks.

- Use caulk or foam sealant to seal holes where phone lines, electrical lines, plumbing, and other services penetrate the walls of the house.
- Seal holes in floors using foam, caulk, and/or other materials wherever pipes and ducts lead to the rooms above and below.
- Seal spaces around plumbing pipes with caulk, foam or other materials to prevent airflow through cabinets under the kitchen sink, under the kitchen island, under bathroom sinks, etc.

Energy Certificate. As of November 2007, the energy code in Kentucky has required that builders attach a permanent certificate on or in the circuit breaker box (i.e. electrical panel box) that lists the materials and equipment values and ratings to demonstrate that a new home meets energy code requirements. The certificate is an important way for the consumer to verify that the home meets code requirements.

Did you know?
Kentucky’s Office of Housing, Building, and Construction has a website available to consumers so they may ensure their HVAC contractor is licensed and following regulations. https://hbc.ky.gov/licensing/electrical/license_lookup.asp

For more information on air leakage from homes, please visit:

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Complying with the Kentucky Residential Energy Code

Based on national minimum energy conservation standards, Kentucky code could be updated with these requirements in the near future (see below). Consider adding these features in your homes to distinguish yourself from the competition:

- **Energy Efficient Lighting.** Lighting has an enormous impact (approximately 12%) on the energy use in homes. The national minimum energy conservation code requires that builders put high efficiency light bulbs in at least 50 percent of hardwired lighting fixtures. High efficiency bulbs can include compact fluorescents, high-efficiency halogens, LEDs, etc.

- **Programmable Thermostat.** Programmable thermostats can generate annual energy savings of 10%. According to the national code, homes with forced-air furnaces must have programmable thermostats installed. Regardless of the heating and cooling system in a home, programmable thermostats can save money. The average cost of a programmable thermostat ranges from $30 to $50.

- **Insulation for the access hatch/door to attic.** Attic access can be a major source of air leakage in homes, causing utility bills to be high and creating uncomfortable drafts. According to national minimum standards, hatches/doors to the attic must 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 easily pulled out when the hatch/or door is closed? If yes, the door/hatch is not airtight.) The insulation should be equivalent to the R-level of surrounding surfaces and attached so that it isn’t damaged or become loose when the hatch or door is opened and closed.

- **Duct testing may be required.** Leaky ducts can be responsible for 10-30% of energy loss in a home. The national code requires that the entire duct system be tested for leaks if any of the ducts are located in an uninsulated 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.
Have a blower door test done. Builders can demonstrate that they’ve sealed air leaks in a new home by having a “blower door” test done. The cost of a blower door test typically ranges from $250.00-350.00.

NOTE: The national energy code requires new or substantially remodeled homes to be tested with blower doors, unless the air sealing in the home was inspected by a qualified professional (usually the local code official). Having a home professionally inspected and/or tested is an important safeguard for consumers.

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 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 with a pressure of 50Pa.

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

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

Additional information can be found at the Kentucky Department of Housing, Buildings, and Construction’s web site: http://www.dhbc.ky.gov/bce/ecd/consumer.htm

The consumer education campaign is made possible by the combined efforts of the following organizations: Kentucky Department for Energy Development and Independence, U.S. Department of Energy, Building Codes Assistance Project, and the Kentucky Department of Housing, Buildings, and Construction.

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