

## Changes in Energy Conservation Code requirements for 2013: Single Family Residential Projects

The Illinois Energy Efficient Building Act requires the construction of new residential buildings, and additions and alterations to existing residential buildings, to meet the provisions of the Illinois Energy Conservation Code.

As of January 1, 2013, the Illinois Energy Conservation Code is based on the 2012 International Energy Conservation Code rather than the 2009 IECC. The change from the 2009 edition to the 2012 edition of the IECC introduces significant advances in the efficiency requirements, and requirements for mandatory testing. For instance:

Section 402.4.1.2 requires new buildings or dwelling units to be tested and verified as having an air leakage rate not exceeding 5 air changes per hour.

Section 403.5.6 (Illinois amendments) requires a Whole House Ventilation system to be designed to provide a continuous minimum rate of fresh air ventilation based on the area of the building and the number of bedrooms.

Section 403.6 requires Heating and Cooling equipment to be sized in accordance with ACCA Manual S, based on building loads calculated in accordance with ACCA Manual J.

To achieve uniform and consistent compliance with the new Energy Code requirements, additional information and documentation will be required during the building permit review process.

Section R103.3.3 of the IECC makes a provision for the Phased Approval of a project. Phased Approval allows a permit to be issued for the “construction of part of an energy conservation system before the construction documents for the entire system have been submitted or approved”. This provision requires “adequate information and detailed statements have been filed complying with all pertinent requirements of the Illinois Energy Conservation Code”. Essentially, the building permit documents must state the requirement for compliance with the IECC and shall specifically delegate the responsibility for providing the engineering and documentation needed to satisfy the requirements.

Historically, few Architects retain a Mechanical Engineer for the design of single family homes. Often, the design of the heating and air conditioning system has been delegated to the Mechanical sub-contractor as part of a design-build agreement. This delegation, which has relied on the knowledge and expertise of the Mechanical sub-contractors, has generally been a satisfactory arrangement.

When the design information for the mechanical system is available during the initial plan review phase, its inclusion in the Building Permit Application submission will be welcomed. If the mechanical systems are to be designed by someone other than the Architect of Record, this arrangement should be specifically stated on the Permit documents in a conspicuous location.

A copy of the 2012 International Energy Conservation Code is a necessity for the designer to clearly and accurately specify the project requirements. Code compliant drawings will indicate the specific information required for acceptance. Citing the code is not an acceptable substitute for the provision of

specific information. At the following link, the code is available in a variety of formats and configurations. <http://shop.iccsafe.org/codes/2012-international-codes/2012-international-energy-conservation-code.html>

It is also important to have a copy of the amendments to the IECC which have been formulated by the State of Illinois. These are available as a free pdf download at the following link. [http://www.ildceo.net/dceo/Bureaus/Energy\\_Recycling/IECC+Amendments.htm](http://www.ildceo.net/dceo/Bureaus/Energy_Recycling/IECC+Amendments.htm)

Based on our reading of the code, the following division of responsibilities appears to be reasonable:

Drawings for Building Permit Review

Code Section	Description of requirement	Compliance
IECC R401.3	Permanent Certificate	Specify requirements on the Permit drawings
IECC R402.1	Building Thermal Envelope	State minimum insulation values on the Permit drawings, and indicate on building and wall sections specific materials in specific thicknesses to achieve the required insulation value
IECC R402.2.4	Access doors weatherstripped and insulated	Specify requirements on the Permit drawings
IECC R402.3	Fenestration insulation values	Specify requirements on the Permit drawings
IECC R402.4.3	Fenestration Air Leakage	Specify requirements on the Permit drawings
IECC R402.4	Air Leakage	The Permit drawings must show the construction by which the building thermal envelope will minimize air leakage (provision of a continuous air barrier), and indicate the sealing of transitions, gaps, and breaks in the air barrier. The Permit drawings shall indicate the testing requirements for air leakage in new buildings.
IECC R402.4.2	Fireplace flue damper and combustion air supply	Specify requirements on the Permit drawings
IECC R402.4.4	Recessed Lighting	Specify requirements on the Permit drawings
IECC R403.4	Insulate domestic Hot Water piping	Specify requirements on the Permit drawings
IECC R404.1	High Efficacy Lighting	Specify requirements on the Permit drawings
	Mechanical Ventilation to meet the requirements of the IECC	Specify on the Permit drawings

Submission for Mechanical Systems Review

Code Section	Description of requirement	Compliance
IECC R403.6	Mechanical Equipment Sizing	Submit calculations for review.
IECC R403.5	Whole House Ventilation System	Submit ductwork plans or other documentation to show compliance with ventilation requirements.

		Indicate the location of automatic or gravity dampers and submit catalog cut sheets.
IECC R403.5.5	System Controls	Submit catalog cut sheets showing compliance with IECC requirements
IECC R403.5.6	Mechanical Ventilation Rate	Indicate compliance with required ventilation rate. Indicate if system will operate intermittently and specify how system is controlled and ventilation rate is adjusted.
IECC R403.5.7	Local Exhaust Rates	Indicate compliance with required exhaust rate.
IECC R403.1.1	Thermostat	Submit catalog cut sheets showing compliance with IECC requirements
IECC R403.2.1	Duct Insulation	Specify required insulation values for ducts in certain locations
IECC R403.2.2	Duct and Air Handler Sealing	Specify the requirement for the sealing of ducts and air handlers, and document material to be used.
IECC R403.3	Insulate Mechanical Piping	Specify the requirement for the insulation of mechanical piping and document material to be used.

The above is a summary of requirements which may be generally applicable to a majority of the projects. Other requirements of the IECC may be applicable to any specific project.

Finally, it should be noted that the changes in the requirements for air tightness may have implications for the management of moisture and moisture vapor in the building envelope. The architect and contractor should carefully consider the design and construction of each portion of the building envelope and air barrier. The Village will not review the drawings for moisture management considerations.