2009 -2015 IECC Residential Significant Changes Summary

Tier I

R401.2 – Compliance – options for compliance are now prescriptive path, Total UA (which is part of prescriptive), Performance and the new "Energy Rating Index" path or "HERS" path.

Table R402.1.2 – Insulation and fenestration requirements by component. For Climate zone 5, the thermal envelope requirements changed as follows:

Fenestration U-Factor: from .35 to .32

Skylight U-Factor: From .60 to .55

Ceiling R-Value: From R38 to R49

Basement or Crawl Space Walls: Changed from R10/13 to R15/19

The rest of the components remained the same. Footnotes changed considerably, most significant was footnote h, which removed wording about, "when using exterior sheathing…" That actually became its own code section instead of a footnote.

402.4 – Air Leakage (Mandatory) – components of the thermal envelope must be installed in accordance with Table R402.4.1.1, inspected per that same table, as well as be tested with a blower door test with an air leakage rate not to exceed 3 ACH(50).

R402.4.4 -- Rooms containing fuel-burning appliances – open combustion space conditioning fuel-burning appliances and their combustion air openings must be outside the building envelope or enclosed in a room isolated from inside the thermal envelope.

R403.3.3 – Duct testing (mandatory) – Ducts located in unconditioned spaces must be tested for air leakage. The test can be held at rough in or final and is done to total duct leakage, not just leakage to the outdoors. The rate at which they must comply is found in Section R403.3.4.

R403.3.4 – Duct Leakage (prescriptive) – the rate of 4cfm per 100 square feet of conditioned floor area for total duct leakage is allowed to be traded off using the simulated performance path or the ERI path.

R404.1 – Lighting equipment (mandatory) – not less than 75% of the lamps in permanently installed lighting fixtures must be high-efficacy lamps or not less than 75% of the permanently installed fixtures must contain high efficacy lamps. Also, fuel gas lighting systems cannot have continuously burning pilot lights.

R406 – Energy Rating Index Compliance Alternative – a new compliance path that allows an energy rating index score to verify code compliance. Climate zone 5 would need a passing score of 55, which is equal to the HERS index score. There is a backdrop built in that does not allow you to trade off any worse than the 2009 IECC values.

Chapter 5 – Existing Buildings – New chapter dealing with additions, alterations and repairs to existing buildings, including historical buildings.

R501.6, 202 – The definition of a historical building has changed, making it a bit tougher to be considered historic. Also, all provisions of the code apply to historic buildings unless the registered design profession or a representative of the State Historic Preservation Office or the historic preservation authority provides a report to the code official demonstrating that compliance would threaten, degrade or destroy the historic form, fabric or function of the building.

R503.1.1.1 – New! If you replace a window in an alteration, where some or all of the fenestration unit is replace it must comply as new. Used to be only if you replaced entire assembly. BE sure to look at R504.2 though for repairs.

Tier II

R102.1 – the provisions for alternate materials has been modified to sate the proposed design must comply with the intent of the code and the material, method or work must be at least equivalent of that prescribed in the code.

R104 -- Inspections – Now calls out required inspections and when you should be able to verify energy code requirements while looking at other items. It brings in third party testing and inspections as permitted by the code official.

R402.2.7 – this is where footnote h landed. Deals with how to handle when exterior insulation is used and there is structural sheathing used so that you can maintain an even surface for exterior finishes.

Table R402.2.6 – updated requirements for insulation in steel framed walls, floors and ceilings

R402.2.8 – gives new exception to allow floor cavity insulation to not be in contact with the subfloor if insulation meeting the above grade wall values is installed from the bottom to top of all perimeter floor framing.

Table R402.4.1.1 – The table was divided into two columns to separate the requirements for air barriers from the requirements for insulation. All of the provisions remained the same within the table.

R402.4.2 – New wood burning fireplaces must have tight fitting flue dampers and doors as well as combustion air. The doors must be listed for the fireplace they are used on.

R403.1.1 Duct insulation (prescriptive) – clarifies that there are different insulation values for ducts in the attic verses ducts in other unconditioned spaces in the building. R-Value of the insulation is now based on duct size as well.

R403.3.5 – Building Cavities (mandatory) – building framing cavities shall not be used as ducts or plenums for supply or return air.

R403.4.1 – HVAC piping that is required to be insulated must have insulation protected from elements.

R403.5 – Service hot water system requirements moved out of 403.4 for mechanical and into its own section 403.5. Heated-water circulating and temperature maintenance systems – New requirements for circulations systems, heat trace systems and controls for hot water storage.

R403.5.2 -- water distribution systems with recirculation pumps that pump water from a heated water supply to the heated water source through a cold water supply must be demand recirculation water systems with specific controls.

R403.5.3 – Hot water pipe insulation (prescriptive) – R3 insulation on hot water pipe over ¾ inch or serving more than one dwelling unit, or located outside the conditioned space, or from the water heater to a distribution manifold, or located under a floor slab or buried piping as well as supply and return piping in recirculating systems other than demand controlled systems.

R403.5.4 – a new section is brought in for drain water heat recovery units. The code doesn't reflect that the entire section is new, only portions, but it is all new. Drain water heat recover units must comply with CSA B55.2 and cannot have a potable water press loss more than 10psi at maximum design flow.

R403.6 – Whole House Mechanical Ventilation – this code gives a pointer to the IRC requirements for mechanical ventilation and doesn't contain any requirements other than the fans used to meet the requirement must be efficient per Table R403.6.1.

R403.7 – Equipment sizing (mandatory) – heating and cooling equipment must be sized using ACCA Manual S, based on the loads calculated using ACCA Manual J or other approved methodologies.

R405.4.2 – clarifies what must be in a compliance report if using the simulated performance path and prohibits batch sampling of buildings to determine compliance. Also clarifies that worst-case scenario may be used when using the same design on varying lots facing different cardinal directions as well as worst case building air leakage and duct leakage.

Table R405.5.2(1) – was updated to reflect any changes in prescriptive requirements for the standard reference design.

R502.1.1.1 – Building envelopes of additions must comply prescriptively as new construction. If non-conditioned space becomes conditioned, the thermal envelope of the addition must comply if the total building's UA is less than or equal to the UA of just the addition.

R502.1.1.2 – Heating and cooling systems for additions must comply as new except ducts from an existing heating and cooling system that extend into the addition less than 40 linear feet are not required to be tested.

R502.1.1.3, 502.1.1.4 – Service hot water systems and new lighting systems for additions must comply as new construction.

R502.1.2 – performance approach for existing plus addition – if the annual energy cost or energy use of the addition and the existing building is less than or equal to that of the existing building the addition shall comply with the full performance path requirements.

R503.1 – Alterations -- Alterations cannot make the existing structure any less conforming to the provisions of the code that it was prior to the alteration. There is a list of 6 items that need not comply with the envelope provisions provided the energy use of the building is not increased.

R503.1.2 – Heating and cooling systems in alterations must comply as new with the same exception for ducts as found in additions.

R503.1.3 – Service hot water systems that are new must comply as new.

R503.1.4 – lighting in alterations – new lighting must comply as new construction with the exception of alterations that replace less than 50% of the luminaires in a space provided installed interior lighting power is not increased.

R505 – Change of occupancy or use – spaces undergoing a change in occupancy that would increase the demand of fossil fuel or electrical energy must comply. Spaces that are converted to a dwelling unit or portion thereof from another use or occupancy must comply. If the simulated performance path is use to verify compliance they the annual energy cost of the proposed design is permitted to be 110% of the annual energy cost allowed by Section R405.3.

Tier III

IECC Residential significant changes 2009-2015

R101.2 – Scope changed so that code applies to buildings and their associated sites.

R101.3 – Intent changed to state that the design and construction shall be regulated for the effective use and conservation of energy over the useful life of each building.

R103.1 – construction documents must be submitted in one or more sets and code official has the right to ask that they be done by a registered design professional.

R103.2 – The information on the construction documents must include everything in order to verify compliance with the thermal envelope, mechanical, service hot water, and lighting requirements, including air sealing details, duct sealing details, mechanical system design, etc.

R103.2.1 – The building's thermal envelope must be depicted on the plans so that the reviewer knows what is inside the envelope or not in order to verify compliance.

R103.3 – Code official has authority to use a registered design professional or other approved entity to review the plans for compliance.

R103.4 – Any changes made in the field must be corrected on updated set of construction documents and submitted for reapproval.

R108 – Stop Work Orders – clarifies when and how stop work orders are to be issued as well as failure to comply provisions.

202 – There are so many new or revised definitions, they will be talked about with the code section they relate to.

R301.4 – New Tropical Climate Zone added

Table R301.1 – Colorado Climate Zones – Added County of Broomfield as it was missing from the table.

R303.1.4.1 – Insulated Siding – Because the code now allows some insulated siding to count as a certain level of continuous insulation the section is brought in to give referenced standard for calculating R-Value.

R401.3 – Certificate (mandatory) – the certificate that used to be on the electrical panel to show what R and U values went into the house is now posted on a wall in the space where the furnace is located or a utility room or other approved location inside the building. It also must contain much more information including duct and blower door test results, equipment efficiencies, where any gas fired unvented room heater, electric furnace or baseboard electric might be, etc.

R402.1 – The provisions for low energy use buildings has moved to this location from Chapter 1.

R402.1.1 – A pointer was brought in reminding you to go to the IRC or IBC for vapor retarder provisions.

R402.1.3 – brings in a reduction of R-Value if using insulated siding to meet the envelope requirements.

R402.2 – clarifies that the specific insulation requirements are in addition to those found throughout Section R402.1.

R402.2.1 – clarifies that if using the trade for lower insulation if using raised heel trusses, the lower insulation can be used over 100% of the roof area, not just at the eaves.

R402.2.3 – Eave baffles are required if air permeable insulation is used in vented attics.

R402.2.4 – When using vertical doors for access doors into unconditioned space they are permitted to use the fenestration requirements instead of R-Value method.

R402.2.13 – changed from Thermally Isolate Sunrooms to just sunrooms but brings thermally isolated back into the exception.

R402.3.2 – Dynamic glazing isn't required in the code but if you use it there are specific provisions for their use.

R402.3.5 – speaks to sunroom fenestration requirements, again bringing back thermal isolation into the exception.

R402.4.5 -- Recessed Lighting – in addition to IC rating and air leakage rates, must also be sealed with gasket or caulk between the housing and interior wall or ceiling covering.

R403.1.1 – changed from requiring programmable thermostat only if you have forced air furnace to now requiring it on any primary heating or cooling system and gives specifics on control settings.

R403.2 – Hot water boilers that supply heat to the building must have outdoor setback controls that lower boiler temp based on outdoor temp. (new section)

R403.3.2 – Air handlers have to come from the manufacturer meeting specific air leakage requirements.

R403.10 – Energy consumption of pools and permanent spas (mandatory) – readily accessible on/off switches, time switches to turn off heaters when not in use or on a preset schedule, vapor retardant pool cover, exception for pools deriving at least 70% of energy for heating from site-recovered energy.

Pools and permanent spas that are accessory to detached homes and townhomes less than 3 stories in height and only available to the household shall be in accordance with APSP-145.

R403.11 -- portable spas shall follow APSP 14

R403.12 – Same exact wording as 403.10.1 except that it references APSP-15 instead of APSP-145.

R501.3 -- Maintenance – All buildings and structures and parts thereof must be maintained in a safe and sanitary condition. Devices and systems that are required by the code must also be maintained in conformance to the code edition under which they were installed.

R504 – Repairs -- most routine maintenance, repairs exempt from permit and abatement of wear due to normal service conditions is not subject to the requirements. Glass only replacements in an existing sash and frame are considered repairs as well as roof repairs.