

September 13, 2006

Mr. Van Cook
Executive Director
Office of Housing, Buildings & Construction
101 Sea Hero Road, Suite 100
Frankfort, KY 40601

RE: Review of Proposed Residential Energy Code Provisions

Dear Van:

As requested, we have completed a review of the provisions of the 2006 International Energy Conservation Code as they apply to residential construction. This review encompassed Chapter 4 of the 2006 Energy Code and Chapter 11 of the 2006 Residential Code, in which the technical provisions are essentially the same. Assisting this review was Mr. Mac Crawford of Crawford Builders who has extensive experience in construction of homes under the provisions of the Residential Code and, to a lesser extent, Mr. Tim Morris, Engineer with CMTA, Inc.

The findings our review are summarized as follows:

1. The inclusion of Kentucky into a single climate zone in lieu of spanning three different zones is a significant improvement.
2. The listing of the prescriptive insulation requirements in a single table without having to compute the amount of window area (as the current prescriptive tables require) is a significant improvement.
3. The fenestration and skylight U-factors and fenestration SHGC requirements in the table essentially follow the median values in the current prescriptive tables and are acceptable.
4. The ceiling insulation and floor insulation R-values in the table are essentially the same as in the existing prescriptive tables and are acceptable.
5. The wood frame wall insulation R-value in the table is less restrictive than in the current prescriptive tables, but is appropriate because it allows for 2x4 exterior wall framing as is common practice.

6. The mass wall insulation R-value listed in the table is much clearer than the text utilized in the current code and is acceptable.
7. Regarding the basement wall insulation R-value in the table, Mr. Crawford reports that he is unaware of any homebuilder utilizing the R-8 to R-9 R-values listed in the prescriptive tables issued as part of the supplement. Apparently, most homebuilders are still utilizing the R-4 basement wall insulation value found in current Table N1102.1 as printed in the 2002 KRC before modification by the supplement. R-4 allows usage of 3/4" rigid insulation as both a protection board and a drainage course, as well as satisfying the minimum basement insulation value, whereas R-10 would require 2" of foam insulation boards. We recommend that this value be amended to allow R-4 for unfinished basements, and to require the higher value only for finished basements with conditioned spaces.
8. Regarding the slab edge insulation R-value in the table, Mr. Crawford reports that similar to basement walls, most contractors are using the R-4 value in the prescriptive table of the 2002 KRC, not the higher values found in the prescriptive tables of the supplement. The R-10 value in the table of the proposed code is significantly higher and becomes an affordability issue in lower cost housing. We recommend that this R-value be amended to restore the lower R-value as in the original 2002 Residential Code.
9. The crawl space wall insulation R-value in the table, while slightly higher than the similar value in the table of the original 2002 KRC, is somewhat lower than those values found in the prescriptive tables of the supplement, and is acceptable.
10. Regarding required certifications found in Section N1101.8, we recommend that the requirements for certifications of HVAC and plumbing equipment be deleted. Mr. Crawford reports that often the builder has little or no control over the choice of those systems. Also, while insulation certification is straightforward regarding batt or board insulation, custom insulation installations such as foam or blown-in should also be certified by the installer in lieu of the builder, and simply requiring labeling in lieu of certification, would be acceptable. Furthermore, we recommend that other locations for labeling be permitted so that space for labeling of electric panels not be lost. Proper labeling of electric circuits is important in its own right, and should not be compromised by taking that space for other purposes.
11. Regarding Section N1102.2.1 and N1102.2.2, at conventionally framed roofs where ceiling joists and rafters lap and both bear upon the double wall plate, rarely is there enough space in the heel height to maintain R-30 ceiling insulation while simultaneously maintaining clearance for required ventilation. This discrepancy needs to be addressed

and clarified. We recommend that an exception be provided for restricted heel height in both of these sections.

12. Also in Section N1102.2.2, we recommend that the 500 square foot limitation be deleted as being too restrictive. Having multiple rooms with cathedral ceilings can easily exceed 500 square feet in a custom designed home.
13. Regarding Section N1102.4 regarding air leakage and N1102.4.1 regarding building thermal envelope, it is our opinion that the enumeration of the 10 items could be misinterpreted and lead to non-uniform enforcement. For example, Item 1 refers to “all joints”, which could be interpreted in a strict sense to mean all joints between sheathing panels must be sealed. Similarly, it is not clear as to what is really required by Item 8 “behind tubs and showers on exterior walls”. Item 10 “other sources of infiltration” is much too open-ended and could be abused by inspectors. It is our position that the language in current KRC Section N1107.1 is superior, and we recommend restoring that language.
14. Section N1102.4.3 requiring sealed and gasketed recessed lighting fixtures is an affordability issue. We have confirmed that the majority of low to medium cost housing builders in central Kentucky do not utilize these types fixtures. We recommend deleting this requirement.
15. Regarding Section N1103.2.1, R-8 duct insulation exceeds the commonly available and used 1-1/2” wrapped fiberglass duct insulation which has an R-value of 5.7. Two inch insulation, while available, is not common and still falls short with an R-value of 7.6. Furthermore, engineers have reported that thicker installations of duct insulation wrap generally result in poorer workmanship. We recommend restoring the minimum R-5 value for duct insulation which meets commonly available materials.
16. Regarding Section N1103.2.2, while sealing of ducts is appropriate, sealing of “filter boxes” is not. The very nature of filter boxes requires operable trap doors or slots for filter removal and replacement. Requiring these openings to be sealed is contradictory. We recommend deleting the requirement for sealing filter boxes.
17. Regarding Section N1103.3, Mr. Crawford reports that almost no hot water pipe is being insulated by homebuilders in central Kentucky, even as required by the current Residential Code at the 120° threshold. The proposed code has a lower threshold of 105°. This becomes another affordability issue. We recommend that the temperature threshold of 120° be restored, at the very least, or preferably that this requirement be deleted entirely.

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18. Regarding Section N1103.4, this is a requirement that is not in the current 2002 KRC, and becomes another affordability issue. Furthermore, as a plumbing issue, if it is deemed necessary, it should be addressed in the plumbing code. We recommend this requirement be deleted.
19. Regarding Section N1103.5, this is another section that is not in the current 200 KRC, and we feel this issue is adequately addressed in N1102.4.1 as discussed in Item 13 above. We recommend that this requirement be deleted.

Many of the concerns noted above are due to affordability. While no single item in itself would be prohibitive, each and every item that increases the cost of a home adds up to create a larger affordability issue. The purpose of the Residential Code is defined in Chapter 1 as “minimum” requirements and includes affordability as one of its criteria. We recommend that serious consideration be given to revise some or all of those technical requirements in Chapter 11 of the proposed Residential Code to current values to keep in check the creeping increase in the cost of construction due to code requirements.

Sincerely,

J. David Carter, AIA

JDC/klk

cc: Mac Crawford, Tim Morris, George Mann, Ric McNees, File