EC39-09/10 Part II
EECC Requested Final Action: Approved as Submitted

EECC Public Comment:

EC39 should be approved as submitted.

Although U-factor and SHGC requirements have been substantially improved for other climate zones in recent code cycles, the northern climate zones have not seen any improvement to their U-factor values. This proposal would address this situation and provide a significant increase in energy efficiency. Lowering the U-factor to 0.32 for these climate zones would reduce window heat loss by approximately 8.5% for these colder climates and would guarantee energy savings year-round. A lower glazing U-factor is a proven energy saver for both heating and cooling energy, thereby providing savings on natural gas, heating oil and electric bills. Lastly, many windows sold in these markets that meet the 0.35 U-factor will also meet the 0.32 U-factor, meaning that the energy savings will come at little or no cost. The likely savings from this proposal are significant and when combined with other code modifications will lead to considerable energy savings for all homes.

The IRC Committee provided no substantive reason for rejecting this proposal. The only reason given for not adopting this improvement is consistency with EC16. Adoption of this proposal would produce consistency with the IECC and save energy.

Proposal History:

Committee Recommended Action on Original Proposal at Public Hearing:

Part I IECC – Approved as Submitted

Part II IRC – Disapproved

Committee Reason(s) for Recommended Action:

Part I IECC – This is compatible with EC13 and provides a reasonably achievable level of energy conservation.

Part II IRC – This proposal would be inconsistent with EC16.

Initial Recommendation of EECC: Approve

Initial Proposal for Reference:

EC39–09/10

Table 402.1.1, Table 402.1.3; IRC Table N1102.1, Table N1102.1.2

Proponent: Bill Prindle, ICF International, representing the Energy Efficient Codes Coalition; Jeff Harris, Alliance to Save Energy; Harry Misuriello, American Council for an Energy-Efficient Economy (ACEEE); Garrett Stone, Brickfield, Burchette, Ritts & Stone; Steve Rosenstock, Edison Electric Institute; Brian Dean, ICF International

THIS IS A 2 PART CODE CHANGE. PART I WILL BE HEARD BY THE IECC COMMITTEE. PART II WILL BE HEARD BY THE IRC BUILDING/ENERGY COMMITTEE. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I – IECC

Revise tables as follows:

TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGCb, [e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLAB[d] R-VALUE & DEPTH	CRAWL SPACE[c] WALL R-VALUE
1	1.2	0.75	0.30	30	13	3/4	13	0	0	0
2	0.65[j]	0.75	0.30	30	13	4/6	13	0	0	0
3	0.50[j]	0.65	0.30	30	13	5/8	19	5/13[f]	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
5 and Marine 4	~~0.35~~ 0.32	0.60	NR	38	20 or 13+5[h]	13/17	30[g]	10/13	10, 2 ft	10/13
6	~~0.35~~ 0.32	0.60	NR	49	20 or 13+5[h]	15/19	30[g]	15/19	10, 4 ft	10/13
7 and 8	~~0.35~~ 0.32	0.60	NR	49	21	19/21	38[g]	15/19	10, 4 ft	10/13

(Footnotes remain unchanged)

TABLE 402.1.3
EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR[b]	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR[d]	CRAWL SPACE WALL U-FACTOR[c]
1	1.20	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.65	0.75	0.035	0.082	0.165	0.064	0.360	0.477
3	0.50	0.65	0.035	0.082	0.141	0.047	0.091c	0.136
4 except Marine	0.35	0.60	0.030	0.082	0.141	0.047	0.059	0.065
5 and Marine 4	~~0.35~~ 0.32	0.60	0.030	0.057	0.082	0.033	0.059	0.065
6	~~0.35~~ 0.32	0.60	0.026	0.057	0.060	0.033	0.050	0.065
7 and 8	~~0.35~~ 0.32	0.60	0.026	0.057	0.057	0.028	0.050	0.065

(Footnotes remain unchanged)

PART II – IRC BUILDING/ENERGY

Revise tables as follows:

TABLE N1102.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[k]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R-VALUE
1	1.2	0.75	0.35j	30	13	3/4	13	0	0	0
2	0.65i	0.75	0.35j	30	13	4/6	13	0	0	0
3	0.50i	0.65	0.35e, j	30	13	5/8	19	5/13f	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
5 and Marine 4	~~0.35~~ 0.32	0.60	NR	38	20 or 13 + 5h	13/17	30f	10/13	10, 2 ft	10/13
6	~~0.35~~ 0.32	0.60	NR	49	20 or 13 + 5h	15/19	30g	10/13	10, 4 ft	10/13
7 and 8	~~0.35~~ 0.32	0.60	NR	49	21	19/21	30g	10/13	10, 4 ft	10/13

(Footnotes remain unchanged)

TABLE N1102.1.2
EQUIVALENT U-FACTORS[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR[b]	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
1	1.20	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.65	0.75	0.035	0.082	0.165	0.064	0.360	0.477
3	0.50	0.65	0.035	0.082	0.141	0.047	0.091c	0.136
4 except Marine	0.35	0.60	0.030	0.082	0.141	0.047	0.059	0.065
5 and Marine 4	~~0.35~~ 0.32	0.60	0.030	0.060	0.082	0.033	0.059	0.065
6	~~0.35~~ 0.32	0.60	0.026	0.060	0.060	0.033	0.059	0.065
7 and 8	~~0.35~~ 0.32	0.60	0.026	0.057	0.057	0.033	0.059	0.065

(Footnotes remain unchanged)

Reason: This proposal specifies an improved fenestration U-factor requirement for colder climates. Lowering the U-factor to 0.32 in zones Marine 4, and 5-8 would result in a guaranteed increase of almost 10% in window insulating value (almost a 10% reduction in heat loss through these

windows) in these cold climates and would guarantee energy savings year-round in every home. A lower glazing U-factor is a proven energy saver for heating and cooling energy, so there will be savings on natural gas, heating oil and electric bills.

While the window U-factor and SHGC requirements in other climate zones have improved substantially in recent code cycles, U-factors in these northern climate zones have not been improved.

Many windows sold in the northern U.S. that meet the 0.35 U-factor also meet the 0.32 U-factor. Typically, the difference between a 0.35 and 0.32 window is the level of argon-fill, a low or no-cost option. While lowering the U-factor from 0.35 to 0.32 may be aggressive for some frame types, the area weighted average approach incorporated into the code will allow some windows to exceed this value, so long as the windows selected for the home on average meet the 0.32 value.

This proposal increases energy efficiency in climate zones Marine 4 and 5-8. The table below illustrates the estimated energy cost savings from this measure in each climate zone. These savings are significant and when coupled with other proposed code modifications can lead to significant overall energy savings for homes.

	Climate Zone 4 Marine	Climate Zone 5	Climate Zone 6	Climate Zone 7	Climate Zone 8
Heating, Cooling, Hot Water Purchased Energy Cost Percent Savings	2.3%	2.0%	2.0%	1.5%	1.7%
Total Purchased Energy Cost Percent Savings (also including major appliances and lighting)	1.8%	1.5%	1.6%	1.2%	1.4%

Cost Impact: The code change proposal will increase the cost of construction.

PART I – IECC

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

PART II – IRC BUILDING/ENERGY

Public Hearing: Committee: AS AM D
Assembly: ASF AMF DF

ICCFILENAME: PRINDLE-EC-15-T. 402.1.1-T. N1102.1