

EC35–09/10

Table 402.1.1; IRC Table N1102.1

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

Proponent: Jeff Lowinski, representing Window and Door Manufacturers Association (WDMA)

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 table 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 SHGC ^{b, 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 ⁱ	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	0.60	NR	38	20 or 13+5 ^h	13/17	30 ^g	10/13	10, 2 ft	10/13
6	0.35	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	0.60	NR	49	21	19/21	38 ^g	15/19	10, 4 ft	10/13

j- For impact rated fenestration complying with Section R301.2.1.2 of the *International Residential Code* or Section 1608.1.2 of the *International Building Code*, the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

(Portions of footnotes not shown remain unchanged)

PART II – IRC BUILDING/ENERGY

Revise table 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 ^e WALL R-VALUE
1	1.2	0.75	0.35 ^j	30	13	3/4	13	0	0	0
2	0.65 ⁱ	0.75	0.35 ^j	30	13	4/6	13	0	0	0
3	0.50 ⁱ	0.65	0.35 ^{e,j}	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	0.60	NR	38	20 or 13 + 5h	13/17	30 ^f	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20 or 13 + 5h	15/19	30 ^g	10/13	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	21	19/21	30 ^g	10/13	10, 4 ft	10/13

i- For impact rated fenestration complying with Section R301.2.1.2, the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

j- For impact resistant fenestration complying with Section R301.2.1.2 of the *International Residential Code*, the maximum SHGC shall be 0.40.

(Portions of footnotes not shown remain unchanged)

Reason:

(Prindle) This proposal will increase energy efficiency by eliminating unnecessary exceptions to the fenestration requirements for impact rated fenestration. The IECC exception for U-factor and the IRC exceptions for U-factor and SHGC should all be removed. The exceptions are written too broadly and create an unnecessary loophole in fenestration requirements.

Exceptions are Too Broad. Although impact rated fenestration may not be required (or even advisable) in every home in climate zones 1 through 3, these exception could apply to any home in this part of the country. These footnotes are not limited to those situations in which the *IBC* or *IRC* would *require* impact rated fenestration. The *IRC* only requires impact-rated glazing in Wind-Borne Debris Regions, and it defines Wind-Borne Debris Region as follows:

Areas within hurricane-prone regions within one mile of the coastal mean high water line where the basic wind speed is 110 miles per hour (49 m/s) or greater; or where the basic wind speed is equal to or greater than 120 miles per hour (54 m/s); or Hawaii.

IRC page 22. Regions that fit within that definition are much narrower than climate zones 2 and 3. See Figure R301.2(4), Basic Wind Speeds for 50-Year Mean Recurrence Interval. While Wind-Borne Debris Regions typically only cover coastal counties, the U-factor exception reaches all counties in these climate zones, even as far inland as Las Vegas, Nevada. The result is a significant wasted opportunity to make new homes more energy efficient, in exchange for windows that are unnecessary in these regions.

Products are Widely Available. Both exceptions were rejected by the *IECC* Committee in the 07/08 code cycle because they are unnecessary: The committee agreed with opponents that there were a sufficient amount of impact resistant products readily available that will meet fenestration U-factors for hurricane prone regions; therefore the exception for impact resistant windows is unnecessary.

There are many products already available on the market that meets both the prescriptive requirements and the wind-borne debris requirement. The exception simply wastes an opportunity to bring more energy efficiency to climate zones 1 through 3.

Weighted Average and Flexibility. Even if a builder installs windows that do not meet the prescriptive requirements, users may simply engage the Total UA Alternative or the Simulated Performance Alternative in Section 405 of the *IECC*, or the Department of Energy's free *REScheck* software, and trade efficiency among all the envelope components. Because of the flexibility afforded by multiple compliance options, exceptions like these unnecessarily weaken the energy efficiency of the code.

(Lowinski) Fenestration thermal performance requirements should be independent of other performance criteria, such as providing protection from wind-borne debris or structural design pressure. This proposal seeks to undo a weakening of the energy code included in the 2009 *IECC*. There's plenty of windows and doors available in the market that can meet the thermal performance requirements as proposed, and meet the impact-resistant requirements of Section 1608.1.2.

Cost Impact: (Lowinski) 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

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