

Commercial Energy Code Vertical Glazing Requirements

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What we'll briefly cover

- ASHRAE/IESNA 90.1-2004
- 2006 IECC (pending but likely)
- Rx tables comparison

Similarities and Differences

- Climate zones (nearly) identical
- U-factor and SHGC very close
- 90.1 covers 8½ pages, IECC covers ½ page

90.1-2004	2006 IECC
50% WWR limit (5 bins)	40% WWR limit (no bins)
differentiates U-factor by fixed vs operable (+ exceptions)	differentiates U-factor by metal vs non-metal frame
differentiates SHGC by E/S/W vs N (latitudes >10°) + multipliers for PF	differentiates SHGC by projection factor
differentiates non-res, res, and semi-heated spaces	no corresponding distinctions
trade-offs allowed by envelope performance	trade-offs by "deemed to comply" COMcheck

ASHRAE/IESNA 90.1-2004

Table 5.5-2 Zone 2A (Austin, TX)

Vertical Glazing % of Wall	Nonresidential		Residential		Semiheated	
	Assembly Max U (fixed / operable)	Assembly Max SHGC (all orient / north-facing)	Assembly Max U (fixed / operable)	Assembly Max SHGC (all orient / north-facing)	Assembly Max U (fixed / operable)	Assembly Max SHGC (all orient / north-facing)
0 – 10.0	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all 0.39 north 0.61	fixed 1.22 oper 1.27	all NR north NR
10.1 – 20.0	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all NR north NR
20.1 – 30.0	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all NR north NR
30.1 – 40.0	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all 0.25 north 0.61	fixed 1.22 oper 1.27	all NR north NR
40.1 – 50.0	fixed 1.22 oper 1.27	all 0.17 north 0.44	fixed 1.22 oper 1.27	all 0.17 north 0.43	fixed 0.98 oper 1.02	all NR north NR

2006 IECC (pending)

TABLE 802.2(2) (Supp)
BUILDING ENVELOPE REQUIREMENTS

Climate Zone	1	2	3	4 except Marine	5 and Marine 4	6	7	8
Vertical Fenestration (40% maximum of above-grade wall)								
SHGC – All Frame Types								
SHGC: PF < 0.25	0.25	0.25	0.25	0.40	0.40	0.40	NR	NR
SHGC: 0.25 < PF < 0.5	0.33	0.33	0.33	NR	NR	NR	NR	NR
SHGC: PF ≥ 0.5	0.40	0.40	0.40	NR	NR	NR	NR	NR
U-factor								
Framing materials other than metal <u>with or without metal reinforcement or cladding</u>								
U-Factor	1.20	0.75	0.65	0.40	0.35	0.35	0.35	0.35
Metal framing <u>with or without thermal break</u>								
Curtain Wall/Storefront U-Factor	1.20	0.70	0.60	0.50	0.45	0.45	0.45	0.45
Entrance Door U-Factor	1.20	1.10	0.90	0.85	0.80	0.80	0.80	0.80
All Other-U-Factor ¹	1.20	0.75	0.65	0.55	0.55	0.55	0.50	0.50

90.1 vs IECC

- relative stringency depends on
 - climate zone
 - glazing % (WWR)
- but generally
 - SHGC nearly equal
 - IECC has more stringent U-factor
- precision vs simplicity

A 3D grid of spheres on a blue background. The spheres are arranged in a regular, repeating pattern that recedes into the distance, creating a sense of depth. The spheres are light blue and connected by thin, light blue lines. The background is a solid, medium blue color.

Questions?