ADDENDA

ANSI/ASHRAE/IES Addendum am to
ANSI/ASHRAE/IES Standard 90.1-2022

Energy Standard for Sites and Buildings Except Low-Rise Residential Buildings

Approved by ASHRAE and the American National Standards Institute on April 30, 2025, and by the Illuminating Engineering Society on March 31, 2025.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (https://www.ashrae.org/continuous-maintenance).

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SPECIAL NOTE

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ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

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c. offering constructive criticism for improving the Standard, or
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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

Addendum am revises the fenestration prescriptive criteria in Tables 5.5-0 through 5.5-8. The proposed changes were subjected to ASHRAE cost-effectiveness analyses to show positive life-cycle energy savings using an average heating and cooling scalar of 21.8 as well as engineering judgment to achieve consensus. A new footnote is added with an allowance in zones 5–7 for products installed at higher elevations to increase product availability, but this is only intended for prescriptive compliance. To restrict the use of the allowance, edits are made to Section 12 and Normative Appendix C to clarify that the footnote is not used in the baseline building. A similar edit is not required in Normative Appendix G, as an independent baseline envelope is used.

In addition to the updated prescriptive criteria, corrections have also been made to the nonswinging opaque door U-factor for semiheated spaces in zones 0–2 that is physically impossible, and an error in the SI values for fixed and operable fenestration U-factors for semiheated spaces in zone 0 that do not match the IP values.

Informative Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum am to Standard 90.1-2022

Modify Tables 5.5-0 through 5.5-8 as follows (IP).

Table 5.5-0 Building Envelope Requirements for Climate Zone 0 (A,B)*

	Nonresidential			Residential			Semiheated		
Opaque Elements	**Assembly Maximum**	**Insulation Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**	
				Opaque Doors					
Swinging	U-0.370			U-0.370			U-0.700		
Nonswinging	U-0.310			U-0.310			U-~~1.450~~ 1.20		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~0.50~~ 0.48	~~0.22~~ 0.21	1.10 (for all types)	~~0.50~~ 0.48	~~0.22~~ 0.21	1.10 (for all types)	1.20	NR (for all types)	NR (for all types)
Operable	0.62	~~0.20~~ 0.19		0.62	~~0.20~~ 0.19		1.20		
Entrance door	0.83	~~0.20~~ 0.19		0.83	~~0.20~~ 0.19		1.10		
				Skylight, 0% to 3% of *Roof*					
All types	~~0.70~~ 0.68	0.30	NR	~~0.70~~ 0.68	0.30	NR	1.80	NR	NR

Table 5.5-1 Building Envelope Requirements for Climate Zone 1 (A,B)*

	Nonresidential			Residential			Semiheated		
Opaque Elements	**Assembly Maximum**	**Insulation Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**	
Opaque Doors									
Swinging	U-0.370			U-0.370			U-0.700		
Nonswinging	U-0.310			U-0.310			U-~~1.450~~ 1.20		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~0.50~~ 0.48	0.23	1.10 (for all types)	~~0.50~~ 0.48	0.23	1.10 (for all types)	1.20	NR (for all types)	NR (for all types)
Operable	0.62	0.21		0.62	0.21		1.20		
Entrance door	0.83	0.21		0.83	0.21		1.10		
Skylight, 0% to 3% of *Roof*									
All types	~~0.70~~ 0.68	0.30	NR	~~0.70~~ 0.68	0.30	NR	1.80	NR	NR

Table 5.5-2 Building Envelope Requirements for Climate Zone 2 (A,B)*

	Nonresidential			Residential			Semiheated		
Opaque Elements	**Assembly Maximum**	**Insulation Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**	
Opaque Doors									
Swinging	U-0.370			U-0.370			U-0.700		
Nonswinging	U-0.310			U-0.310			U-~~1.450~~ 1.20		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	0.45	~~0.25~~ 0.23	1.10 (for all types)	0.45	0.25	1.10 (for all types)	~~0.50~~ 0.48	NR (for all types)	NR (for all types)
Operable	0.60	~~0.23~~ 0.21		0.60	0.23		~~0.65~~ 0.62		
Entrance door	0.77	~~0.23~~ 0.21		0.77	0.23		0.77		
Skylight, 0% to 3% of *Roof*									
All types	0.65	0.30	NR	0.65	0.30	NR	~~0.90~~ 0.75	NR	NR

Table 5.5-3 Building Envelope Requirements for Climate Zone 3 (A,B,C)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~0.42~~ 0.38	0.25	1.10 (for all types)	~~0.42~~ 0.38	0.25	1.10 (for all types)	~~0.50~~ 0.48	NR (for all types)	NR (for all types)
Operable	0.54	0.23		0.54	0.23		~~0.65~~ 0.62		
Entrance door	0.68	0.23		0.68	0.23		0.77		
Skylight, 0% to 3% of *Roof*									
All types	0.55	0.30	NR	0.55	0.30	NR	~~0.90~~ 0.75	NR	NR

Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~0.36~~ 0.35	~~0.36~~ 0.34	1.10 (for all types)	~~0.36~~ 0.35	~~0.36~~ 0.34	1.10 (for all types)	~~0.50~~ 0.45	NR (for all types)	NR (for all types)
Operable	~~0.45~~ 0.43	~~0.33~~ 0.31		~~0.45~~ 0.43	~~0.33~~ 0.31		~~0.65~~ 0.60		
Entrance door	0.63	~~0.33~~ 0.31		0.63	~~0.33~~ 0.31		0.77		
				Skylight, 0% to 3% of *Roof*					
All types	~~0.50~~ 0.48	0.40	NR	~~0.50~~ 0.48	0.40	NR	~~0.75~~ 0.65	NR	NR

Table 5.5-5 Building Envelope Requirements for Climate Zone 5 (A,B,C)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U[c]**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U[c]**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~0.36~~ 0.32	0.38	1.10 (for all types)	~~0.36~~ 0.32	0.38	1.10 (for all types)	~~0.50~~ 0.42	NR (for all types)	NR (for all types)
Operable	~~0.45~~ 0.39	0.33		~~0.45~~ 0.39	0.33		~~0.65~~ 0.54		
Entrance door	0.63	0.33		0.63	0.33		0.77		
				Skylight, 0% to 3% of *Roof*					
All types	~~0.50~~ 0.48	0.40	NR	~~0.50~~ 0.48	0.40	NR	~~0.75~~ 0.65	NR	NR

c. At *sites* located 4000 feet or more above sea level, the assembly maximum *U-factor* is permitted to be increased by 0.02 Btu/hr × ft^2 × °F.

Table 5.5-6 Building Envelope Requirements for Climate Zone 6 (A,B)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U[c]**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U[c]**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~0.34~~ 0.31	0.38	1.10 (for all types)	~~0.34~~ 0.31	0.38	1.10 (for all types)	~~0.39~~ 0.35	NR (for all types)	NR (for all types)
Operable	~~0.42~~ 0.38	0.34		~~0.42~~ 0.38	0.34		~~0.48~~ 0.43		
Entrance door	0.63	0.34		0.63	0.34		0.68		
				Skylight, 0% to 3% of *Roof*					
All types	~~0.47~~ 0.46	0.40	NR	~~0.50~~ 0.46	0.40	NR	~~0.75~~ 0.65	NR	NR

c. At *sites* located 4000 ft or more above sea level, the assembly maximum *U-factor* is permitted to be increased by 0.02 Btu/hr × ft^2 × °F.

Table 5.5-7 Building Envelope Requirements for Climate Zone 7*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U[b]**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U[b]**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~0.29~~ 0.28	0.40	1.10 (for all types)	~~0.29~~ 0.28	0.40	1.10 (for all types)	~~0.36~~ 0.32	NR (for all types)	NR (for all types)
Operable	~~0.36~~ 0.35	0.36		~~0.36~~ 0.35	0.36		~~0.44~~ 0.39		
Entrance door	0.63	0.36		0.63	0.36		0.63		
				Skylight, 0% to 3% of *Roof*					
All types	0.44	NR	NR	0.44	NR	NR	~~0.75~~ 0.55	NR	NR

b. At *sites* located 4000 ft or more above sea level, the assembly maximum *U-factor* is permitted to be increased by 0.02 Btu/hr × ft^2 × °F.

Table 5.5-8 Building Envelope Requirements for Climate Zone 8*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~0.26~~ 0.25	0.40	1.10 (for all types)	~~0.26~~ 0.25	0.40	1.10 (for all types)	~~0.36~~ 0.31	NR (for all types)	NR (for all types)
Operable	~~0.32~~ 0.31	0.36		~~0.32~~ 0.31	0.36		~~0.44~~ 0.38		
Entrance door	0.63	0.36		0.63	0.36		0.63		
				Skylight, 0% to 3% of *Roof*					
All types	~~0.41~~ 0.40	NR	NR	~~0.41~~ 0.40	NR	NR	~~0.75~~ 0.55	NR	NR

Modify Tables 5.5-0 through 5.5-8 as follows (SI).

Table 5.5-0 Building Envelope Requirements for Climate Zone 0 (A,B)*

	Nonresidential		Residential		Semiheated	
Opaque Elements	**Assembly Maximum**	**Insulation Min. R-Value**	**Assembly Maximum**	**Insulation Min. R-Value**	**Assembly Maximum**	**Insulation Min. R-Value**
			Opaque Doors			
Swinging	U-2.101		U-2.101		U-3.975	
Nonswinging	U-1.760		U-1.760		U-~~8.233~~ 6.81	

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
				Vertical Fenestration, 0% to 40% of *Wall*					
Fixed	~~2.84~~ 2.72	~~0.22~~ 0.21	1.10 (for all types)	~~2.84~~ 2.72	~~0.22~~ 0.21	1.10 (for all types)	~~2.84~~ 6.81	NR (for all types)	NR (for all types)
Operable	3.52	~~0.20~~ 0.19		3.52	~~0.20~~ 0.19		~~3.69~~ 6.81		
Entrance door	4.71	~~0.20~~ 0.19		4.71	~~0.20~~ 0.19		6.25		
				Skylight, 0% to 3% of *Roof*					
All types	~~3.973~~ 3.86	0.30	NR	~~3.973~~ 3.86	0.30	NR	10.22	NR	NR

Table 5.5-1 Building Envelope Requirements for Climate Zone 1 (A,B)*

	Nonresidential			Residential			Semiheated		
Opaque Elements	**Assembly Maximum**	**Insualtion Min. R-Value**		**Assembly Maximum**	**Insualtion Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**	
Opaque Doors									
Swinging	U-2.101			U-2.101			U-3.975		
Nonswinging	U-1.760			U-1.760			U-~~8.233~~ 6.81		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~2.84~~ 2.72	0.23	1.10 (for all types)	~~2.84~~ 2.72	0.23	1.10 (for all types)	6.81	NR (for all types)	NR (for all types)
Operable	3.52	0.21		3.52	0.21		6.81		
Entrance door	4.71	0.21		4.71	0.21		6.25		
Skylight, 0% to 3% of *Roof*									
All types	~~3.97~~ 3.86	0.30	NR	~~3.97~~ 3.86	0.30	NR	10.22	NR	NR

Table 5.5-2 Building Envelope Requirements for Climate Zone 2 (A,B)*

	Nonresidential			Residential			Semiheated		
Opaque Elements	**Assembly Maximum**	**Insualtion Min. R-Value**		**Assembly Maximum**	**Insualtion Min. R-Value**		**Assembly Maximum**	**Insulation Min. R-Value**	
Opaque Doors									
Swinging	U-2.101			U-2.101			U-3.975		
Nonswinging	U-1.760			U-1.760			U-~~8.233~~ 6.81		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	2.56	~~0.25~~ 0.23	1.10 (for all types)	2.56	0.25	1.10 (for all types)	~~2.84~~ 2.72	NR (for all types)	NR (for all types)
Operable	3.41	~~0.23~~ 0.21		3.41	0.23		~~3.69~~ 3.52		
Entrance door	4.37	~~0.23~~ 0.21		4.37	0.23		4.37		
Skylight, 0% to 3% of *Roof*									
All types	3.69	0.30	NR	3.69	0.30	NR	~~5.11~~ 4.26	NR	NR

Table 5.5-3 Building Envelope Requirements for Climate Zone 3 (A,B,C)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~2.38~~ 2.16	0.25	1.10 (for all types)	~~2.38~~ 2.16	0.25	1.10 (for all types)	~~2.84~~ 2.72	NR (for all types)	NR (for all types)
Operable	3.07	0.23		3.07	0.23		~~3.69~~ 3.52		
Entrance door	3.86	0.23		3.86	0.23		0.77		
Skylight, 0% to 3% of *Roof*									
All types	3.12	0.30	NR	3.12	0.30	NR	~~5.11~~ 4.26	NR	NR

Table 5.5-4 Building Envelope Requirements for Climate Zone 4 (A,B,C)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~2.04~~ 1.99	~~0.36~~ 0.34	1.10 (for all types)	~~2.04~~ 1.99	~~0.36~~ 0.34	1.10 (for all types)	~~2.84~~ 2.55	NR (for all types)	NR (for all types)
Operable	~~2.56~~ 2.44	~~0.33~~ 0.31		~~2.56~~ 2.44	~~0.33~~ 0.31		~~3.69~~ 3.41		
Entrance door	3.58	~~0.33~~ 0.31		3.58	~~0.33~~ 0.31		4.37		
Skylight, 0% to 3% of *Roof*									
All types	~~2.84~~ 2.72	0.40	NR	~~2.84~~ 2.72	0.40	NR	~~4.26~~ 3.69	NR	NR

Table 5.5-5 Building Envelope Requirements for Climate Zone 5 (A,B,C)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U[c]**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U[c]**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~2.04~~ 1.82	0.38	1.10 (for all types)	~~2.04~~ 1.82	0.38	1.10 (for all types)	~~2.84~~ 2.38	NR (for all types)	NR (for all types)
Operable	~~2.56~~ 2.21	0.33		~~2.56~~ 2.21	0.33		~~3.69~~ 3.06		
Entrance door	3.58	0.33		3.58	0.33		4.37		
Skylight, 0% to 3% of *Roof*									
All types	~~2.84~~ 2.72	0.40	NR	~~2.84~~ 2.72	0.40	NR	~~4.26~~ 3.69	NR	NR

c. At *sites* located 1200 m or more above sea level, the assembly maximum *U-factor* is permitted to be increased by 0.11 W/m^{2}K.

Table 5.5-6 Building Envelope Requirements for Climate Zone 6 (A,B)*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U[c]**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U[c]**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~1.93~~ 1.76	0.38	1.10 (for all types)	~~1.93~~ 1.76	0.38	1.10 (for all types)	~~2.21~~ 1.99	NR (for all types)	NR (for all types)
Operable	~~2.38~~ 2.16	0.34		~~2.38~~ 2.16	0.34		~~2.73~~ 2.44		
Entrance door	3.58	0.34		3.58	0.34		3.86		
Skylight, 0% to 3% of *Roof*									
All types	~~2.67~~ 2.61	0.40	NR	~~2.84~~ 2.61	0.40	NR	~~4.26~~ 3.69	NR	NR

c. At *sites* located 1200 m or more above sea level, the assembly maximum *U-factor* is permitted to be increased by 0.11 W/m^{2}K.

Table 5.5-7 Building Envelope Requirements for Climate Zone 7*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U[b]**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U[b]**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~1.65~~ 1.59	0.40	1.10 (for all types)	~~1.65~~ 1.59	0.40	1.10 (for all types)	~~2.04~~ 1.82	NR (for all types)	NR (for all types)
Operable	~~2.04~~ 1.99	0.36		~~2.04~~ 1.99	0.36		~~2.50~~ 2.21		
Entrance door	3.58	0.36		3.58	0.36		3.58		
Skylight, 0% to 3% of *Roof*									
All types	2.50	NR	NR	2.50	NR	NR	~~4.26~~ 3.12	NR	NR

b. At *sites* located 1200 m or more above sea level, the assembly maximum *U-factor* is permitted to be increased by 0.11 W/m^{2}K.

Table 5.5-8 Building Envelope Requirements for Climate Zone 8*

	Nonresidential			Residential			Semiheated		
Fenestration	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max. SHGC**	**Assembly Min. VT/SHGC**	**Assembly Max. U**	**Assembly Max.SHGC**	**Assembly Min. VT/SHGC**
Vertical Fenestration, 0% to 40% of *Wall*									
Fixed	~~1.48~~ 1.42	0.40	1.10 (for all types)	~~1.48~~ 1.42	0.40	1.10 (for all types)	~~2.04~~ 1.76	NR (for all types)	NR (for all types)
Operable	~~1.82~~ 1.76	0.36		~~1.82~~ 1.76	0.36		~~2.50~~ 2.16		
Entrance door	3.58	0.36		3.58	0.36		3.58		
Skylight, 0% to 3% of *Roof*									
All types	~~2.33~~ 2.27	NR	NR	~~2.33~~ 2.27	NR	NR	~~4.26~~ 3.12	NR	NR

Modify Table 12.5.1 as follows. The remainder of the table is unchanged.

Table 12.5.1 Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget

Proposed Design (Column A) Design Energy Cost (DEC)	**Budget Building Design (Column B) Energy Cost Budget (ECB)**
5. Building Envelope	
(unchanged)	d. No shading projections are to be modeled; *fenestration* shall be assumed to be flush with the *wall* or *roof*. If the *fenestration area* for new *buildings* or additions exceeds the maxi- mum allowed by Section 5.5.4.2, the area shall be reduced proportionally along each exposure until the limit set in Section 5.5.4.2 is met. If the *vertical fenestration area* facing west or east of the *proposed design* exceeds the area limit set in Section 5.5.4.5 then the *energy cost budget* shall be generated by simulating the *budget building design* with its actual *orientation* and again after rotating the entire *budget building design* 90, 180, and 270 degrees and then averaging the results. *Fenestration U-factor* shall be equal to the criteria from Tables 5.5-0 through 5.5-8 for the appropriate climate without use of *fenestration* footnotes, and the *SHGC* shall be equal to the criteria from Tables 5.5-0 through 5.5-8 for the appropriate climate. For portions of those tables where there are no *SHGC* requirements, the *SHGC* shall be equal to that determined in accordance with Section C3.6(d). The *VT* shall be equal to that determined in accordance with Section C3.6(d). The *fenestration* model for *building envelope alterations* shall reflect the limitations on area, *U-factor*, and *SHGC* as described in Section 5.1.4.

Modify Appendix C as follows. The remainder of the appendix is unchanged.

C3.6 Calculation of Base Envelope Performance Factor. The simulation model for calculating the *base envelope performance factor* shall modify the simulation model for calculating the *proposed envelope performance factor* as follows:

[. . .]

d. *Fenestration* shall be assumed to be flush with the *wall* or *roof*. *Fenestration U-factor* and *SHGC* shall be the maximum allowed for the appropriate *class of construction*, *space conditioning category*, and climate zone in accordance with Section 5.5.4 without use of *fenestration* footnotes in Tables 5.5-5 through 5.5-7. Where there is no *SHGC* requirement, the *SHGC* shall be equal to 0.40 for all *vertical fenestration* and 0.55 for *skylights*. The *VT* for *fenestration* in the base envelope design shall be equal to 1.10 times the *SHGC*.

[. . .]

POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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About ASHRAE

Founded in 1894, ASHRAE is a global professional society committed to serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration, and their allied fields.

As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

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4/25