

2021 International Energy Conservation Code (11-9-11) Model Electric Ready and Solar Ready Codes (11-9-12)

NOTE:

The 2021 International Energy Conservation Code (IECC) and the Model Electric Ready and Solar Ready Codes are minimum standards established by the State of Colorado as part of HB22-1362 in May of 2022. This Bill requires municipalities that update a building code to adopt and enforce an energy code that achieves equivalent or better energy performance than the 2021 IECC and the Model Electric and Solar Ready Code. Jurisdictions may make any amendments to the energy code that the deem appropriate for local conditions, so long as the amendments "do not decrease the effectiveness or energy efficiency of the energy code."

The City of Westminster is proposing amending the IECC to coordinate the definition of residential and commercial building to correspond with the definitions in the International Residential Code (IRC) and the International Building Code (IBC). Other proposed amendments include fill-in-the-blank or eliminating non-applicable sections based on the local climate zone.

11-9-11. INTERNATIONAL ENERGY CONSERVATION CODE AMENDMENTS.

(A) Chapter 1 of the International Energy Conservation Code is amended as follows:

The scope and administration of this code shall be in accordance with Title 11, Chapter 9 of the Westminster Municipal Code as well Chapters C1 and R1 of the IECC for subject matter not covered under the Westminster Municipal Code, Title 11, Chapter 9.

(B) Section C401.2.1, of the International Energy Conservation Code is amended as follows:

C401.2.1 International Energy Conservation Code.

Commercial buildings shall comply with one of the following:

1. Prescriptive Compliance. The Prescriptive Compliance option requires compliance with Sections C402 through C406 and Section C408. Dwelling units and sleeping units in Group R-2 buildings without systems serving multiple units shall be deemed to be in compliance with this chapter, provided that they comply with Section R406.
2. Total Building Performance. The Total Building Performance option requires compliance with ANSI/ASHRAE/IESNA 90.1-Appendix G.

(C) Tables C402.1.3 and C402.1.4 of the International Energy Conservation Code are amended as follows:

Table C402.1.3 and C402.1.4 is amended as follows to remove all inapplicable climate zones, footnotes, and to include all errata published to date:

Table C402.1.3

OPAQUE THERM ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, R-VALUE METHOD^a

	Climate Zone 5B	
	All Other	Group R
Roofs		
Insulation entirely above roof deck	R-30ci	R-30ci
Metal buildings^b	R-19+R-11LS	R-19+R-11LS
Attick and other	R-49	R-49
Walls, Above Grade		
Mass^f	R-11.4ci	R-13.3ci
Metal building	R-13+R-14ci	R-13+R-14ci
Metal framed	R-13+R-10ci	R-13+R-10ci
Wood framed and other	R-13+R-7.5ci or R-20+R-3.8ci	R-13+R-7.5ci or R-20+R-3.8ci
Walls, Below Grade		
Below-grade wall^d	R-7.5ci	R-10ci
Floors		
Mass^e	R-14.6ci	R-16.7ci
Joist/framing	R-30	R-30
Slab-on-grade floors		
Unheated slabs	R-15 for 24"	R-20 for 24"
Heated slabs^g	R=15 for 36" + R-5 full slab	R=15 for 36" + R-5 full slab

For SI: 1 inch=25.4mm, 1 psf = 4.88kg/m, 1 pound per cubic foot=16 kg/m³.

ci=continuous insulation, LS = Liner System

a. Assembly descriptions can be found in ANSI/ASHRAE/IESNA 90.1 App. A

- b. Where using R-value compliance method, a thermal space block shall be provided, otherwise use the U-factor compliance method in Table C402.1.4.
- c. REMOVED
- d. Where heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.
- e. "Mass floors" shall be in accordance with Section C402.2.3.
- f. "Mass walls" shall be in accordance with Section C402.2.2.
- g. The first value is for perimeter insulation and the second value is for full, under-slab insulation. Perimeter insulation is not required to extend below the bottom of the slab.

Table C402.1.4

OPAQUE THERM ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, U-FACTOR METHOD^{a,b}

	Climate Zone 5B	
	All Other	Group R
Roofs		
Insulation entirely above roof deck	U-0.032	U-0.032
Metal buildings	U-0.035	U-0.035
Attack and other	U-0.021	U-0.021
Walls, Above Grade		
Mass^e	U-0.090	U-0.080
Metal building	U-0.050	U-0.050
Metal framed	U-0.055	U-0.055
Wood framed and other	U=0.051	U=0.051
Walls, Below Grade		
Below-grade wall^c	C-0.119	C-0.092
Floors		
Mass^d	U-0.057	U-0.051
Joist/framing	U-0.033	U-0.033
Slab-on-grade floors		
Unheated slabs	F-0.52	F-0.51
Heated slabs	F-0.62	F-0.62
Opaque doors		

Nonswinging door	U-0.31	U-0.31
Swinging door^h	U-0.37	U-0.37
Garage door less than 14% glazingⁱ	U-0.31	U-0.31

For SI: 1 pound per square foot = 4.88kg/m, 1 pound per cubic foot=16 kg/m³.

ci=continuous insulation, NR=No Requirement, LS = Liner System

- a. Where assembly U-, C- and F-factors are established in ANSI/ASHRAE/IESNA 90.1 Appendix A, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table, and provided that the construction, excluding the cladding system on walls, complies with the appropriate construction details from ANSI/ASHRAE/IESNA 90.1 Appendix A.
- b. Where U-factors have been established by testing in accordance with ASTM C1363, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table. The R-value of continuous insulation shall be permitted to be added to or subtracted from the original tested design.
- c. Where heated slabs are below grade, below-grade walls shall comply with the U-factor requirements for above-grade mass walls.
- d. "Mass floors" shall be in accordance with Section C402.2.2.
- e. REMOVED
- f. REMOVED
- g. "Mass walls" shall be in accordance with Section C402.2.2.
- h. Swinging door U-factors shall be determined in accordance with NFRC-100.
- i. Garage doors having a single row of fenestration shall have an assembly U-factor less than or equal to 0.44, provided that the fenestration area is not less than 14% and not more than 25% of the total door area.

(D) Table C402.4 of the International Energy Conservation Code is amended as follows to remove all inapplicable climate zones:

Table C402.4

BUILDING ENVELOPE FENESTRATION MAXIMUM U-FACTOR AND SHGC REQUIREMENTS

CLIMATE ZONE	5B
Vertical fenestration	
U-factor	
Fixed fenestration	0.36
Operable fenestration	0.45
Entrance doors	0.63
SHGC	

Orientation	Fixed	Operable
PF	0.38	0.33
$0.2 \leq \text{PF}$	0.46	0.40
PF	0.61	0.53
Skylights		
U-factor	0.50	
SHGC	0.40	

PF = Projection Factor

(E) Section C403.4.1.1 of the International Energy Conservation Code is amended as follows:

C403.4.1.1 Heat pump supplementary heat. Heat pumps having fuel burning equipment or electric resistance equipment for supplementary space heating shall have controls that are configured to prevent supplemental heat operation when the capacity of the heat pump compressor can meet the heating load; and limit supplemental heat operation to only those times when one of the following applies:

1. For space heating systems, the vapor compression cycle cannot provide the necessary heating energy to satisfy the thermostat setting.

Exception: For forced-air systems, the vapor compression cycle cannot provide a supply air temperature of 85°F or greater

2. The heat pump is operating in defrost mode.
3. The vapor compression cycle malfunctions.
4. For space heating systems, the thermostat malfunctions.

(F) Section C407 of the International Energy Conservation Code is amended as follows:

Section C407 Total Building Performance is deleted in its entirety.

(G) Commercial appendix Table is added as follows:

COMMERCIAL APPENDIX ADOPTION TABLE

None of the Appendices are Adopted.

(H) Section R202 of the International Energy Conservation Code is amended as follows:

Section R202 Definitions is amended as follows:

RESIDENTIAL BUILDING. For this code, includes detached one- and two-family dwellings and townhouses as well as Group R-3 and R-4 buildings three stories or less in height above grade plane.

(I) Section R303.2 of the International Energy Conservation Code is amended as follows:

R303.2 Installation. Materials, systems, and equipment shall be installed in accordance with the manufacturer's instructions and the *International Building Code* or the *International Residential Code*, as applicable. Insulation shall meet the requirements of the Grade I standard in ICC/RESNET 301 Normative Appendix A.

(J) Section R401.2.4 of the International Energy Conservation Code is amended as follows:

Section R401.2.4 Tropical Climate Region Option is deleted in its entirety.

(K) Section R401.3 of the International Energy Conservation Code is amended as follows:

Section R401.3 is amended as follows:

7. The code edition under which the structure was permitted, and the compliance path used, and where applicable, the additional efficiency measures selected for compliance with R408.
8. Where a solar-ready zone is provided, the certificate shall indicate the location, and dimensions.

- (L) Section R403.1.2 of the International Energy Conservation Code is amended as follows:

R403.1.2 Heat pump supplementary heat. Heat pumps having supplementary electric resistance heat shall have controls that are configured to prevent supplemental heat operation when the capacity of the heat pump compressor can meet the heating load. Limit supplemental heat operation to only those times when one of the following applies:

1. The vapor compression cycle cannot provide the necessary heating energy to satisfy the thermostat setting.
2. The heat pump is operating in defrost mode.
3. The vapor compression cycle malfunctions.
4. The thermostat malfunctions.

- (M) Section R407 of the International Energy Conservation Code is amended as follows:

Section R407 Tropical Climate Region Compliance Path is deleted in its entirety.

- (N) Residential appendix Table is added as follows:

RESIDENTIAL APPENDIX ADOPTION TABLE

None of the Appendices are Adopted.

11-9-12. MODEL ELECTRIC READY AND SOLAR READY CODE AMENDMENTS

(A) Chapter 1 of the Model Electric Ready and Solar Ready Code is replaced as follows:

The scope and administration of this code shall be in accordance with Title 11, Chapter 9 of the Westminster Municipal Code.

Exception: Section 102 of the Model Electric Ready and Solar Ready Code is added as follows:

SECTION 102 WAIVER AND VARIANCE.

102.1 Scope. The following waivers shall be permitted to be requested if buildings meet the following requirements.

102.1.1 Commercial Buildings Greater than 10,000 sq. ft. Commercial buildings that have a gross floor area greater than 10,000 sq. ft. shall be eligible to request a partial waiver to the requirements of this code if they meet the requirements of Section 102.2.

102.1.2 Buildings Impacted by a Natural Disaster. The City of Westminster is permitted to authorize, upon appeal in specific cases, a waiver from the requirements of this code where, owing to a declared natural disaster that has destroyed buildings or resulted in other exceptional and extraordinary circumstances as determined by The City of Westminster, and The City of Westminster determines enforcement of the provisions of this code will result in unnecessary hardship.

102.2 Substantial Cost Differential Waiver. The City of Westminster shall be permitted to authorize, upon appeal, a waiver from the requirements of this code for an applicant that asserts that compliance with this code will result in a substantial cost differential. The City of Westminster, when authorizing such a waiver, shall be permitted to waive certain requirements of this code only until the cost differential for compliance with the remaining requirements reaches one percent or less. The burden of proof is upon the applicant to provide substantiation of a cost differential, such as quotes or other licensed design professional analyses as approved by The City of Westminster.

102.2.1 Substantial Cost Differential. For the purposes of Section 102.2, “substantial cost differential” means costs incurred as a result of compliance with the requirements of this code would exceed one percent of total mechanical, electrical, and plumbing construction costs inclusive of materials and labor.