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1st and 2nd PRINTINGS (Posted: 09-27-13)

CHAPTER 1 [CE]
SCOPE AND ADMINISTRATION

C106.1.1 Conflicts. Where ~~differences~~ conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

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1st and 2nd PRINTINGS (Posted: 09-27-13)

CHAPTER 2 [CE]
DEFINITIONS

~~**ABOVE-GRADE WALL.** A wall more than 50 percent above grade and enclosing *conditioned space*. This includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, walls enclosing a mansard roof and skylight shafts.~~

~~**BASEMENT WALL.** A wall 50 percent or more below grade and enclosing *conditioned space*.~~

COEFFICEINT OF PERFORMANCE (COP) – HEATING. The ratio of the rate of heat ~~removal to the rate of heat~~ delivered to the rate of energy input, in consistent units, for a complete heat pump system, including the compressor and, if applicable, auxiliary heat, under designated operating conditions.

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CHAPTER 4[CE]
COMMERCIAL ENERGY EFFICIENCY

C403.2.8 Piping insulation. All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table C403.2.8.

Exception:

2. Factory-installed piping within room fan-coils and unit ventilators tested and rated according to AHRI 440 (except that the sampling and variation provisions of Section 6.5 shall not apply) and AHRI 840.

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CHAPTER 4 [CE]
COMMERCIAL ENERGY EFFICIENCY

C402.2.5 Floors over outdoor air or unconditioned space.

2. 25 psf (120 kg/m^2) of floor surface area if the material weight is not more than ~~12~~ 120 pcf (1,900 kg/m^3).

TABLE C402.3.3.1
SHGC ADJUSTMENT MULTIPLIERS

Projection Factor	Oriented Within 45 Degrees of True North	All Other Orientation
0.2 ≤ PF < 0.5	1.1	1.2
PF~~<~~ > 0.5	1.2	1.6

TABLE C403.2.3(3)
Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps,Single-Package Vertical Air Conditioners, Single Vertical Heat Pumps, Room Air Conditioners, And Room Air-Conditioner Heat Pumps – Minimum Efficiency Requirements

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency		Test procedure[a]
			Before 10/08/2012	As of 10/08/2012	
PTHP (heating mode) New construction	All Capacities		3.2-(~~0.26~~ 0.026 x Cap/1000) COP	3.2-(~~0.26~~ 0.026 x cap/1000) COP	AHRI 310/380
PTHP (heating mode) replacements[b]	All Capacities		2.9-(~~0.26~~ 0.026 x Cap/1000) COP	2.9-(~~0.26~~ 0.026 x Cap/1000) COP	AHRI 310/380

C403.4.5 Requirements for complex mechanical systems serving multiple zones. Sections C403.4.5.1 through ~~C403.4.5.3~~ C403.4.5.4 shall apply to complex mechanical systems serving multiple zones.

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CHAPTER 4 [CE]
COMMERICIAL ENERGY EFFICIENCY

TABLE C402.2
OPAQUE THERMAL ENVELOPE REQUIREMENTS[a]

CLIMATE ZONE	1		2		3		4 EXCEPT MARINE		5 AND MARINE 4		6		7		8	
	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R	All Other	Group R
Walls, Above Grade																
Mass[c]	R-5.7ci[c]	R-5.7ci[c]	R-5.7ci[c]	R-7.6ci	R-7.6ci	R-9.5ci	R-9.5ci	R-11.4ci	R-11.4ci	R-13.3ci	R-13.3ci	R-15.2ci	R-15.2ci	R-15.2ci	R-25ci	R-25ci

C402.3.2 Minimum skylight fenestration area. In an enclosed space greater than 10,000 square feet (929 m^2), directly under a roof with ceiling heights greater than 15 feet (4572 mm), and used as an office, lobby, atrium, concourse, corridor, storage, gymnasium/exercise center, convention center, automotive service, manufacturing, non-refrigerated warehouse, retail store, distributing/sorting area, transportation, or workshop, the total daylight zone under skylights shall be not less than half the floor area and shall provide a minimum skylight area to daylight zone under skylights of either:

2. Provide a minimum skylight effective aperture of at least 1 percent determined in accordance with Equation C4-1.

$$\text{Skylight Effective } \sout{\text{Aperature}}\ \underline{\text{Aperture}} = \frac{\underline{0.85 \times \text{Skylight Area} \times \text{Skylight VT} \times \text{WF}}}{\text{Daylight zone under skylight}}$$

(**Equation C4-1**)

C402.3.3 Maximum U-factor and SHGC. For vertical fenestration, the maximum U-factor and solar heat gain coefficient (SHGC) shall be as specified in Table C402.3, based on the window projection factor. For skylights, the maximum U-factor and solar heat gain coefficient (SHGC) shall be as specified in Table C402.3.

The window projection factor shall be determined in accordance with Equation C4-2.

$$PF = A/B \qquad \text{(Equation C4-2)}$$

C402.4.1.1 Air barrier construction. The continuous air barrier shall be constructed to comply with the following:

1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across the joints and assemblies.
2. Air barrier joints and seams shall be sealed, including sealing transitions in places and changes in materials. Air barrier penetrations shall be sealed in accordance with Section C402.4.2. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.
3. Recessed lighting fixtures shall comply with Section ~~C4042.8~~ C402.4.8. Where similar objects are installed which penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.

Exception: Buildings that comply with Section C402.4.1.2.3 are not required to comply with Items 1 and 3.

C402.4.8 Recessed lighting. Recessed luminaires installed in the *building thermal envelope* shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and *labeled* as having an air leakage rate ~~or~~ of not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa)

pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and interior wall or ceiling covering.

TABLE C403.2.3(1)
MINIMUM EFFICIENCY REQUIREMENTS:
ELECTRICALLY OPERATED UNITARY AIR CONDITIONERS AND CONDENSING UNITS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY		TEST PROCEDURE[a]
				Before 6/1/2011	As of 6/1/2011	
Air conditioners, water cooled	< 65,000 Btu/h[b]	All	Split System and Single Package	12.1 EER 12.3 IEER	12.1 EER 12.3 IEER	AHRI 210/240
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.5 EER 11.7 IEER	12.1 EER 12.3 IEER	AHRI 340/360
		All other	Split System and Single Package	11.3 EER 11.5 IEER	11.9 EER 12.1 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 11.2 IEER	12.5 EER 12.7 IEER	
		All other	Split System and Single Package	10.8 EER 11.0 IEER	12.3 EER 12.5 IEER	
	≥ 240,000 Btu/h and < 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 11.1 ~~IEER~~ EER	12.4 EER 12.6 ~~IEER~~ EER	
		All other	Split System and Single Package	10.8 EER 10.9 ~~IEER~~ EER	12.2 EER 12.4 ~~IEER~~ EER	
	≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 11.1 ~~IEER~~ EER	12.0 EER 12.4 ~~IEER~~ EER	
		All other	Split System and Single Package	10.8 EER 10.9 ~~IEER~~ EER	12.0 EER 12.2 ~~IEER~~ EER	
EQUIPMENT TYPE	**SIZE CATEGORY**	**HEATING SECTION TYPE**	**SUB-CATEGORY OR RATING CONDITION**	**MINIMUM EFFICIENCY**		**TEST PROCEDURE[a]**
				Before 6/1/2011	**As of 6/1/2011**	
Air conditioners, evaporatively cooled	< 65,000 Btu/h[b]	All	Split System and Single Package	12.1 EER 12.3 IEER	12.1 EER 12.3 IEER	AHRI 210/240
	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.5 EER 11.7 IEER	12.1 EER 12.3 IEER	AHRI 340/360
		All other	Split System and Single Package	11.3 EER 11.5 IEER	11.9 EER 12.1 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 11.2 IEER	12.0 EER 12.2 IEER	
		All other	Split System and Single Package	10.8 EER 11.0 IEER	11.8 EER 12.0 IEER	
	≥ 240,000 Btu/h and < 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 11.1 ~~IEER~~ EER	11.9 EER 12.1 ~~IEER~~ EER	
		All other	Split System and Single Package	10.8 EER 10.9 ~~IEER~~ EER	12.2 EER 11.9 ~~IEER~~ EER	
	≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 11.1 EER	11.7 EER 11.9 EER	

		All other	Split System and Single Package	10.8 EER 10.9 EER	11.5 EER 11.7 EER	

For SI: 1 British thermal unit per hour = 0.2931 W.

a. Chapter 6 of the referenced standard contains a complete specification of the referenced test procedure, including the reference year version of the test procedure.

b. Single-phase, air-cooled air conditioners less than 65,000 Btu/h are regulated by NAECA. SEER values are those set by NAECA.

TABLE C403.2.3(3)
Electrically Operated Packaged Terminal Air Conditioners, Packaged Terminal Heat Pumps,Single-Package Vertical Air Conditioners, Single Vertical Heat Pumps, Room Air Conditioners, And Room Air-Conditioner Heat Pumps – Minimum Efficiency Requirements

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Minimum Efficiency		Test procedure[a]
			Before 10/08/2012	As of 10/08/2012	
Room air conditioners, without louvered slides	< 8,000 Btu/h	-	9.0 EER	9.0 EER	ANSI/AHAM RAC-1
	≥ 8,000 Btu/h and < 20,000 Btu/h	-	8.5 EER	8.5 EER	
	≥ 20,000 Btu/h	-	8.5 EER	8.5 EER	

C403.2.3.1 Water-cooled centrifugal chilling packages. Equipment not designed for operation at AHRI Standard 550/590 test conditions of 44°F (7°C) leaving chilled-water temperature and 85°F (29°C) entering condenser water temperature with 3 gpm/ton (0.054 l/s x kW) condenser water flow shall have a maximum full-load kW/ton and *NPLV* ratings adjusted using Equations C4-3 and C4-4.

Adjusted minimum full-load COP ratings = (Full-load COP from Table 6.8.1Cof AHRI Standard 550/590) x K_{adj}

(Equation C4-3)

Adjusted minimum *NPLV* rating = (IPLV from Table 6.8.1C of AHRI Standard 550/590) x K_{adj}

(Equation C4-4)

C403.2.7.1.3 High-pressure duct systems. Ducts designed to operate at static pressures in excess of 3 inches water gauge (w.g.) (750 Pa) shall be insulated and sealed in accordance with Section C403.2.7. In addition, ducts and plenums shall be leak-tested in accordance with the SMACNA *HVAC Air Duct Leakage Test Manual* with the rate of air leakage (CL) less than or equal to 6.0 as determined in accordance with Equation C4-5.

$CL = F/P^{0.65}$ **(Equation C4-5)**

TABLE C406.3
REDUCED INTERIOR LIGHTING POWER

BUILDING TYPE	LPD (w/ft^2)
~~Automtive~~ Automotive facility	0.82

TABLE C407.5.1(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT CHARACTERISTICS	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Space use classification	Same as proposed	The space use classification shall be chosen in accordance with Table C405.5.2 for all areas of the building covered by this permit. Where the space use classification for a building is not known, the building shall be categorized as an office building.
Lighting, interior	The interior lighting power shall be determined in accordance with ~~Table~~ Section C405.5.2. Where the occupancy of the building is not known, the lighting power density shall be 1.0 Watt per square foot (10.73 W/m^2) based on the categorization of buildings with unknown space classification as offices.	As proposed

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CHAPTER 4 [CE]
COMMERCIAL ENERGY EFFICIENCY

C402.3.2 Minimum skylight fenestration area. In an enclosed space greater than 10,000 square feet (929 m^2), directly under a roof with ceiling heights greater than 15 feet (4572 mm), and used as an office, lobby, atrium, concourse, corridor, storage, gymnasium/exercise center, convention center, automotive service, manufacturing, non-refrigerated warehouse, retail store, distributing/sorting area, transportation, or workshop, the total daylight zone under skylights shall be not less than half the floor area and shall provide a minimum skylight area to daylight zone under skylights of either:

2. Provide a minimum skylight effective aperture of at least 1 percent determined in accordance with Equation **C**4-1.

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3rd PRINTING ONLY (Posted: 09-27-13)

CHAPTER 4 [CE]
COMMERCIAL ENERGY EFFICIENCY

C405.5.1.1 Screw lamp holders. The wattage shall be the maximum *labeled* wattage of the luminaire.

C405.5.1.2 Low-voltage lighting. The wattage shall be the specified wattage of the transformer supplying the system.

C405.5.1.3 Other luminaires. The wattage of all other lighting equipment shall be the wattage of the lighting equipment verified through data furnished by the manufacturer or other *approved* sources.

C405.5.1.4 Line-voltage lighting track and plug-in busway. The wattage shall be:

1. The specified wattage of the luminaires included in the system with a minimum of 30 W/lin ft. (98 W/lin. m);
2. The wattage limit of the system's circuit breaker; or
3. The wattage limit of other permanent current limiting device(s) on the system.

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CHAPTER 5[CE]
REFERENCED STANDARDS

AHRI

Standard reference number	Title	Referenced in code Section number
840-1998	Unit Ventilators	403.2.8

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CHAPTER *5* [CE]
REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section C106.

IESNA Illuminating Engineering Society of North America
120 Wall Street, 17th Floor
New York, NY 10005-4001

Standard reference number	Title	Referenced in code section number
ANSI/ASHRAE/IESNA 90.1—~~2007~~ 2010	Energy Standard for Buildings, Except Low-rise Residential Buildings	C401.2, C401.2.1, C402.1.1,Table C402.1.2, Table C402.2

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CHAPTER 5 [CE]
REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section C106.

NFRC National Fenestration Rating Council, Inc.
6305 Ivy Lane, Suite 140
Greenbelt, MD 20770

Standard reference number	Title	Referenced in code section number
100- 2010	Procedure for Determining Fenestration Products U-factors…~~Second Edition~~…….	C303.1.2, C402.2.1
200- 2010	Procedure for Determining Fenestration Product Solar Heat Gain Coefficients And Visible Transmittance at Normal Incidence ~~Second Edition~~……	C303.1.3, C402.3.1.1
400 -2010	Procedure for Determining Fenestration Product Air Leakage….~~Second Edition~~…	Table C402.4.3

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