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**TITLE 675 FIRE PREVENTION AND BUILDING  
SAFETY COMMISSION**

**Proposed Rule**  
LSA Document #05-58

**DIGEST**

Adds 675 IAC 19-4, which adopts by reference and amends the International Energy Conservation Code, 2004 Supplement Edition. Repeals 675 IAC 19-3. Effective 30 days after filing with the Secretary of State.

**675 IAC 19-3**

**675 IAC 19-4**

SECTION 1. 675 IAC 19-4 IS ADDED TO READ AS FOLLOWS:

**Rule 4. Indiana Energy Conservation Code, 2006 Edition**

**675 IAC 19-4-1 Title; availability**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 1. (a) This rule shall be:**

(1) known as the **Indiana Energy Conservation Code, 2006 Edition**; and

(2) published, except for incorporated documents, by the department of homeland security, for general distribution and use under that title.

Wherever the term “this code” is used within this rule, it shall mean the **Indiana Energy Conservation Code, 2006 Edition**.

(b) This rule and incorporated documents therein are available from the Department of Homeland Security, Fire and Building Safety Division, Indiana Government Center-South, 302 West Washington Street, Room E243, Indianapolis, Indiana 46204. (*Fire Prevention and Building Safety Commission; 675 IAC 19-4-1*)

**675 IAC 19-4-2 Adoption by reference**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 2. That certain document, being titled as the International Energy Conservation Code, 2004 Supplement Edition, published by the International Code Council, Inc., 4051 West Flossmoor Road, Country Club Hills, Illinois 60478-5795, be and the same is hereby adopted by reference, as if fully set out in this rule, save and except those amendments made in this rule.** (*Fire Prevention and Building Safety Commission; 675 IAC 19-4-2*)

**675 IAC 19-4-3 Section 101; scope and general requirements**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 3. Delete Section 101 except for subsection 101.1 without substitution.** (*Fire Prevention and Building Safety Commission; 675 IAC 19-4-3*)

**675 IAC 19-4-4 Section 101.1; title reference**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 4. Amend subsection 101.1 Title to read as follows: This code shall be known as the Indiana Energy Conservation Code, 2006 Edition, hereinafter referred to as “this code”. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-4)**

**675 IAC 19-4-5 Section 102; materials, systems, and equipment**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 5. Delete Section 102 in its entirety without substitution. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-5)**

**675 IAC 19-4-6 Table 102.1.3(3); default glazed fenestration SHGC**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 6. Delete Table 102.1.3(3) and substitute to read as follows:**

TABLE 102.1.3(3)				
DEFAULT GLAZED FENESTRATION SHGC				
Single Glazed		Double Glazed		Glazed Block
Clear	Tinted	Clear	Tinted	
0.8	0.7	0.7	0.6	0.6

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-6)*

**675 IAC 19-4-7 Section 103; alternate materials – method of construction, design or insulating systems**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 7. Delete Section 103 in its entirety and substitute to read as follows: See 675 IAC 12-6-11. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-7)**

**675 IAC 19-4-8 Section 104; construction documents**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 8. Delete Section 104 in its entirety without substitution. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-8)**

**675 IAC 19-4-9 Section 105; inspections**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 9. Delete Section 105 in its entirety without substitution. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-9)**

**675 IAC 19-4-10 Section 106; validity**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 10. Delete Section 106 in its entirety without substitution. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-10)**

**675 IAC 19-4-11 Section 107; referenced standards**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 11. Delete Section 107 in its entirety and substitute to read as follows: REFERENCED STANDARDS 107.1 General.**

The standards, and portions thereof, referred to in this code are not adopted, enforceable only to the extent of such reference, and otherwise are for reference only. (*Fire Prevention and Building Safety Commission; 675 IAC 19-4-11*)

**675 IAC 19-4-12 Section 202; general definitions**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 10-19-2; IC 22-12-1-4; IC 22-12-1-5; IC 22-13; IC 22-15; IC 36-7

**Sec. 12. Amend Section 202 as follows:**

**(1) Change the text of the following definitions in Section 202 to read as follows:**

**APPROVED.** Acceptance by the authority having jurisdiction by one (1) of the following methods:

- (1) Investigation or tests conducted by nationally recognized authorities; or
- (2) Investigation or tests conducted by nationally recognized technical or scientific organizations; or
- (3) Nationally accepted principles.

The investigation, tests, or principles shall establish that the method, material, equipment, design, or type of construction is safe for its intended purpose.

**CODE OFFICIAL.** The Division of Fire and Building Safety or officer of a local unit of government empowered by law to administer and enforce the rules of the commission.

**COMMERCIAL BUILDING.** A Class 1 structure as defined in IC 22-12-1-4.

**EXTERIOR WALL.** Walls enclosing conditioned space, including both above-grade walls and basement walls, which are vertical or sloped at an angle 60 degrees or greater from horizontal.

**LABELED.** Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization engaged in product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

**LISTED.** Equipment or materials included in a list published by an organization engaged in product evaluation, that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

**RESIDENTIAL BUILDING.** A Class 2 structure as defined in IC 22-12-1-5.

**(2) Add the following definitions:**

**ANNUAL FUEL UTILIZATION EFFICIENCY (AFUE).** The total heating output of a furnace during its normal annual usage period, as measured using the United States Department of Energy test procedures divided by the total fuel input to the furnace in BTU's during the same period.

**AUTHORITY HAVING JURISDICTION.** See definition for Code Official.

**DIVISION OF FIRE AND BUILDING SAFETY.** The Division of Fire and Building Safety of the Indiana Department of Homeland Security created pursuant to IC 10-19-2.

**COEFFICIENT OF PERFORMANCE (COP).** The ratio of the rate of net heat output/removal to the rate of total on-site energy input.

**ENERGY EFFICIENCY RATIO (EER).** The ratio of net equipment cooling capacity in Btu/h(W) to total rate of electric input in watts under designated operating conditions.

**HEATING SEASON PERFORMANCE FACTOR (HSPF).** The total heating output of a heat pump in BTU's during its normal annual usage period for heating divided by the total electric power in watt/hours during the same period.

**INTERRUPTED OR INTERMITTENT IGNITION DEVICE (IID).** A device that delivers a spark to a pilot light at predetermined intervals.

**INDIANA MECHANICAL CODE.** The International Mechanical Code, 2000 Edition, as incorporated by reference and amended in 675 IAC 18.

**INTEGRATED PART-LOAD VALUE (IPLV).** A single number figure of merit based on part-load EER or COP expressing part-load efficiency for air conditioning and heat pump equipment on the basis of weighted operation at various load capacities for the equipment.

**PACKAGED TERMINAL AIR CONDITIONER (PTAC).** A factory-selected wall sleeve and separate unencased combination of heating and cooling components, assemblies, or sections (intended for mounting through the wall to serve a single room or zone). It includes heating capability by hot water, steam, or electricity.

**PACKAGED TERMINAL HEAT PUMP (PTHP).** A PTAC capable of using the refrigeration system in a reverse cycle or heat pump mode to provide heat.

**SEASONAL ENERGY EFFICIENCY RATIO (SEER).** The total cooling output of an air conditioner in BTU's during its normal annual usage period for cooling divided by the total electric power in watt/hours during the same period.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-12)*

**675 IAC 19-4-13 Section 302.1; interior design conditions**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 13. Amend Section 302.1 to read as follows: The interior design temperatures used for heating and cooling load calculations shall be a maximum of 72°F (22°C) for heating and minimum of 75°F (24°C) for cooling.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-13)*

**675 IAC 19-4-14 Chapter 4; residential energy efficiency**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 14. Delete Chapter 4 in its entirety and substitute to read as follows: For residential energy efficiency requirements, see 675 IAC 14.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-14)*

**675 IAC 19-4-15 Section 801.1; scope**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 15. Amend subsection 801.1 Scope to read as follows: The requirements contained in this chapter are applicable to commercial buildings or portions of commercial buildings. These commercial buildings shall meet either the requirements contained in this chapter or alternative methods under 675 IAC 12-6-11.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-15)*

**675 IAC 19-4-16 Section 801.2; application**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 16. Amend subsection 801.2 Application to read as follows: The requirements in Sections 802 (Building envelope), 803 (Building mechanical systems), 804 (Service water heating) and 805 (Lighting) shall each be satisfied on an individual basis. Where one or more of these sections is not satisfied, compliance for that section(s) shall be demonstrated in accordance with 675 IAC 12-6-11.**

**Exception: Buildings conforming to Section 806, provided Sections 802.4 through 802.5, 803.2, 804, 805.2, 805.3, 805.4, 805.6, and 805.7 are each satisfied.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-16)*

**675 IAC 19-4-17 Section 802.1; general**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 17. Amend subsection 802.1 to read as follows: 802.1 General (Prescriptive). Building envelopes shall meet the prescriptive requirements of this section.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-17)*

**675 IAC 19-4-18 Section 802.1.1; classification of walls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 18. Amend subsection 802.1.1 to read as follows: 802.1.1 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Tables 802.2 and 802.3 based on the climate zone specified in Chapter 3. Buildings with a vertical fenestration area or skylight area that exceeds that allowed in Table 802.3 shall comply with 675 IAC 12-6-11.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-18)*

**675 IAC 19-4-19 Section 802.1.1.1; above-grade walls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 19. Delete Section 802.1.1.1 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-19)*

**675 IAC 19-4-20 Section 802.1.1.2; below-grade walls**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 20. Delete Section 802.1.1.2 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-20)*

**675 IAC 19-4-21 Section 802.1.1.3; interior walls**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 21. Delete Section 802.1.1.3 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-21)*

**675 IAC 19-4-22 Section 802.1.2; moisture control**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 22. Delete subsection 802.1.2 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-22)*

**675 IAC 19-4-23 Section 802.2; criteria**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 23. Delete subsection 802.2 and substitute to read as follows: 802.2 Specific insulation requirements (Prescriptive). Opaque assemblies shall comply with Table 802.2.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-23)*

**675 IAC 19-4-24 Section 802.2.1; above-grade walls**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 24. Delete subsection 802.2.1 and substitute to read as follows: 802.2.1 Roof assembly. The minimum thermal resistance (R-value) of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table 802.2, based on construction materials used in the roof assembly.**

**Exception: Continuously insulated roof assemblies where the thickness of insulation varies 1 inch (25.4 mm) or less and where the area weighted U-factor is equivalent to the same assembly with the R-value specified in Table 802.2.**  
*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-24)*

**675 IAC 19-4-25 Section 802.2.2; opaque doors**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 25. Delete subsection 802.2.2 and substitute to read as follows: 802.2.2 Classification of walls. Walls associated with the building envelope shall be classified in accordance with Section 802.2.2.1 or 802.2.2.2.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-25)*

**675 IAC 19-4-26 Section 802.2.2.1; above-grade walls**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 26. Insert subsection 802.2.2.1 to read as follows: 802.2.2.1 Above-grade walls. Above-grade walls are those walls covered by Section 802.2.3 on the exterior of the building and completely above grade or walls that are more than 15 percent above grade. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-26)**

**675 IAC 19-4-27 Section 802.2.2.2; below-grade walls**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 27. Insert subsection 802.2.2.2 to read as follows: 802.2.2.2 Below-grade walls. Below-grade walls covered by Section 802.2.4 are basement or first-story walls associated with the exterior of the building that are at least 85 percent below grade. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-27)**

**675 IAC 19-4-28 Section 802.2.3; windows and glass doors**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 28. Delete subsection 802.2.3 and substitute to read as follows: 802.2.3 Above-grade walls. The minimum thermal resistance (R-value) of the insulating material(s) installed in the wall cavity between the framing members and continuously on the walls shall be as specified in Table 802.2, based on framing type and construction materials used in the wall assembly. The R-value of integral insulation installed in concrete masonry units (CMU) shall not be used in determining compliance with Table 802.2.**

**“Mass walls”, for purposes of this subsection, shall include walls weighing at least:**

**(1) 35 pounds per square foot (170 kg/m<sup>2</sup>) of wall surface area; or**

**(2) 25 pounds per square foot (120 kg/m<sup>2</sup>) of wall surface area if the material weight is not more than 120 pounds per cubic foot (1,900 kg/m<sup>3</sup>).**

**(Fire Prevention and Building Safety Commission; 675 IAC 19-4-28)**

**675 IAC 19-4-29 Section 802.2.4; roof assembly**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 29. Delete subsection 802.2.4 and substitute to read as follows: 802.2.4 Below-grade walls. The minimum thermal resistance (R-value) of the insulating material installed in, or continuously on, the below-grade walls shall be as specified in Table 802.2, and shall extend to a depth of 10 feet (3,048 mm) below the outside finish ground level or to the level of the floor, whichever is less. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-29)**

**675 IAC 19-4-30 Section 802.2.5; skylights**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 30. Delete subsection 802.2.5 and substitute to read as follows: 802.2.5 Floors over outdoor air or unconditioned space. The minimum thermal resistance (R-value) of the insulating material installed either between the floor framing or continuously on the floor assembly shall be as specified in Table 802.2, based on construction materials used in the floor assembly.**

**“Mass floors”, for purposes of this subsection, shall include floors weighing at least:**

**(1) 35 pounds per square foot (170 kg/m<sup>2</sup>) of floor surface area; or**

**(2) 25 pounds per square foot (120 kg/m<sup>2</sup>) of floor surface area if the material weight is not more than 120 pounds per cubic foot (1,900 kg/m<sup>3</sup>).**

**(Fire Prevention and Building Safety Commission; 675 IAC 19-4-30)**

**675 IAC 19-4-31 Section 802.2.6; floors over outdoor air or unconditioned space**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 31. Delete subsection 802.2.6 and substitute to read as follows: 802.2.6 Slabs on grade.** The minimum thermal resistance (R-value) of the insulation around the perimeter of unheated or heated slab-on-grade floors shall be as specified in Table 802.2. The insulation shall be placed on the outside of the foundation or on the inside of the foundation wall. The insulation shall extend downward from the top of the slab for a minimum distance as shown in Table 802.2 or to the top of the footing, whichever is less, or downward to at least the bottom of the slab and then horizontally to the interior or exterior for the total distance shown in Table 802.2. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-31)*

**675 IAC 19-4-32 Section 802.2.7; slabs on grade**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 32. Delete subsection 802.2.7 and substitute to read as follows: 802.2.7 Opaque doors.** Opaque doors (doors having less than 50 percent glass area) shall meet the applicable requirements for doors as specified in Table 802.2 and be considered as part of the gross area of above-grade walls that are part of the building envelope. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-32)*

**675 IAC 19-4-33 Section 802.2.8; below-grade walls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 33. Delete subsection 802.2.8 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-33)*

**675 IAC 19-4-34 Section 802.2.9; interior walls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 34. Delete subsection 802.2.9 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-34)*

**675 IAC 19-4-35 Section 802.3; air leakage**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 35. Delete subsection 802.3 and substitute to read as follows: 802.3 Fenestration (Prescriptive).** Fenestration shall comply with Table 802.3. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-35)*

**675 IAC 19-4-36 Section 802.3.1; window and door assemblies**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 36. Delete subsection 802.3.1 and substitute to read as follows: 802.3.1 Maximum area.** The vertical fenestration area (not including opaque doors) shall not exceed the percentage of the gross wall area specified in Table 802.3. The skylight area shall not exceed the percentage of the gross roof area specified in Table 802.3. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-36)*

**675 IAC 19-4-37 Section 802.3.2; curtain wall, storefront glazing, and commercial entrance doors**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 37. Delete subsection 802.3.2 and substitute to read as follows: 802.3.2 Maximum U-factor and SHGC.** For vertical fenestration, the maximum U-factor and solar heat gain coefficient (SHGC) shall be as specified in Table 802.3, based on the

window projection factor. For skylights, the maximum U-factor and SHGC shall be as specified in Table 802.3.

The window projection factor shall be determined in accordance with Equation 8-1.

$$PF = A/B \text{ (Equation 8-1)}$$

where: PF = Projection factor (decimal).

A = Distance measured horizontally from the furthest continuous extremity of any overhang, eave, or permanently attached shading device to the vertical surface of the glazing.

B = Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave, or permanently attached shading device.

Where different windows or glass doors have different PF values, they shall each be evaluated separately, or an area-weighted PF value shall be calculated and used for all windows and glass doors. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-37)*

**675 IAC 19-4-38 Section 802.3.3; sealing of the building envelope**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 38. Delete subsection 802.3.3 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-38)*

**675 IAC 19-4-39 Section 802.3.4; outdoor air intakes and exhaust openings**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 39. Delete subsection 802.3.4 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-39)*

**675 IAC 19-4-40 Section 802.3.5; loading dock weather seals**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 40. Delete subsection 802.3.5 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-40)*

**675 IAC 19-4-41 Section 802.3.6; vestibules**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 41. Delete subsection 802.3.6 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-41)*

**675 IAC 19-4-42 Section 802.3.7; recessed luminaires**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 42. Delete subsection 802.3.7 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-42)*

**675 IAC 19-4-43 Table 802.2(1); building envelope requirements – opaque elements**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 43. Delete Table 802.2(1) in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-43)*

**675 IAC 19-4-44 Table 802.2(2); building envelope requirements**



**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 44. Delete Table 802.2(2) in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-44)*

**675 IAC 19-4-45 Table 802.2(3); metal building assembly descriptions**

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 45. Delete Table 802.2(3) in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-45)*

**675 IAC 19-4-46 Section 802.4; air leakage**

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 46. Insert subsection 802.4 to read as follows: 802.4 Air leakage (Mandatory). Air leakage shall conform to the mandatory requirements of this section.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-46)*

**675 IAC 19-4-47 Section 802.4.1; window and door assemblies**

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 47. Insert subsection 802.4.1 to read as follows: 802.4.1 Window and door assemblies. The air leakage of window and sliding or swinging door assemblies that are part of the building envelope shall be determined in accordance with AAMA/WDMA 101/I.S.2 or 101/I.S.2/NAFS-02, or NFRC 400 by an accredited, independent laboratory listed in 675 IAC 12-6-11, and labeled and certified by the manufacturer and shall not exceed the values in Section 402.4.2.**

**Exception: Site-constructed windows and doors that are weatherstripped or sealed in accordance with Section 802.4.3.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-47)*

**675 IAC 19-4-48 Section 802.4.2; curtain wall, storefront glazing, and commercial entrance doors**

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 48. Insert subsection 802.4.2 to read as follows: 802.4.2 Curtain wall, storefront glazing, and commercial entrance doors. Curtain wall, storefront glazing, and commercial-glazed swinging entrance doors and revolving doors shall be tested for air leakage at 1.57 pounds per square inch (psi) (75 Pa) in accordance with ASTM E 283. For curtain walls and storefront glazing, the maximum air leakage rate shall be 0.3 cubic feet per minute per square foot (cfm/ft<sup>2</sup>) (5.5 m<sup>3</sup>/h × m<sup>2</sup>) of fenestration area. For commercial-glazed swinging entrance doors and revolving doors, the maximum air leakage rate shall be 1.00 cfm/ft<sup>2</sup> (18.3 m<sup>3</sup>/h × m<sup>2</sup>) of door area when tested in accordance with ASTM E 283.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-48)*

**675 IAC 19-4-49 Section 802.4.3; sealing of the building envelope**

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 49. Insert subsection 802.4.3 to read as follows: 802.4.3 Sealing of the building envelope. Openings and penetrations in the building envelope shall be sealed with caulking materials or closed with gasketing systems compatible with the construction materials and location of the building envelope. Joints and seams shall be sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials spanning joints between construction materials shall allow for expansion and contraction of the construction materials.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-49)*

**675 IAC 19-4-50 Section 802.4.4; outdoor air intakes and exhaust openings**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 50.** Insert subsection 802.4.4 to read as follows: **802.4.4 Outdoor air intakes and exhaust openings.** Stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I motorized, leakage-rated damper with a maximum leakage rate of 4 cfm/ft<sup>2</sup> ( 6.8 L/s - m<sup>2</sup>) at 1.0 inch water gauge (w.g.) (1250 Pa) when tested in accordance with AMCA 500D. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-50)*

**675 IAC 19-4-51 Section 802.4.5; loading dock weather seals**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 51.** Insert subsection 802.4.5 to read as follows: **802.4.5 Loading dock weather seals.** Cargo doors and loading dock doors shall be equipped with weather seals to restrict infiltration of outside air when vehicles are parked in the doorway. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-51)*

**675 IAC 19-4-52 Section 802.4.6; vestibules**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 52.** Insert subsection 802.4.6 to read as follows: **802.4.6 Vestibules.** A door that separates conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time.

**Exceptions:** 1. Doors not intended to be used as a building entrance door, such as doors to mechanical or electrical equipment rooms.

2. Doors opening directly from a guestroom or dwelling unit.

3. Doors that open directly to the outside from a space less than 3,000 square feet (298 m<sup>2</sup>) in area.

4. Revolving doors.

5. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-52)*

**675 IAC 19-4-53 Section 802.4.7; recessed luminaires**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 53.** Insert subsection 802.4.7 to read as follows: **802.4.7 Recessed luminaires.** When installed in the building envelope, recessed luminaires shall meet one of the following requirements:

1. Type IC rated, manufactured with no penetrations between the inside of the recessed fixture and ceiling cavity and sealed or gasketed to prevent air leakage into the unconditioned space.

2. Type IC or non-IC rated, installed inside a sealed box constructed from a minimum 0.5-inch-thick (12.7 mm) gypsum wallboard or constructed from a preformed polymeric vapor barrier, or other air-tight assembly manufactured for this purpose, while maintaining required clearances of not less than 0.5 inch (12.7 mm) from combustible material and not less than 3 inches (76 mm) from insulation material.

3. Type IC rated, in accordance with ASTM E 283 admitting no more than 2.0 cubic feet per minute (cfm) (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. The luminaire shall be tested at 1.57 psi (75 Pa) pressure difference and shall be labeled.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-53)*

**675 IAC 19-4-54 Section 802.5; moisture control (mandatory)**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 54.** Insert subsection 802.5 to read as follows: **802.5 Moisture control (Mandatory).** All framed walls, floors, and

ceilings not ventilated to allow moisture to escape shall be provided with an approved vapor retarder having a permeance rating of 1 perm ( $5.7 \times 10^{-11} \text{ kg/Pa} \cdot \text{s} \cdot \text{m}^2$ ) or less, when tested in accordance with the desiccant method using Procedure A of ASTM E 96. The vapor retarder shall be installed on the warm-in-winter side of the insulation.

Exceptions: 1. In construction where moisture or its freezing will not damage the materials.

2. Where other approved means to avoid condensation in unventilated framed wall, floor, roof, and ceiling cavities are provided.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-54)

675 IAC 19-4-55 Table 802.2; building envelope requirements – opaque assemblies

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 55. Insert Table 802.2 to read as follows:

**TABLE 802.2**  
**BUILDING ENVELOPE REQUIREMENTS – OPAQUE ASSEMBLIES**

CLIMATE ZONE	1	2	3	4	5	6	7	8
<b>Roofs</b>								
Insulation entirely above deck	R-15 ci	R-15 ci	R-15 ci	R-15 ci	R-20 ci	R-20 ci	R-25 ci	R-25 ci
Metal buildings (with R-5 thermal blocks <sup>1</sup> ) <sup>2</sup>	R-19 + R-10	R-19	R-19	R-19	R-19	R-19	R-19 + R-10	R-19 + R-10
Attic and other	R-30	R-30	R-30	R-30	R-30	R-30	R-38	R-38
<b>Walls, Above Grade</b>								
Mass	NR	NR	R-5.7 ci <sup>3,5</sup>	R-5.7 ci <sup>3</sup>	R-7.6 ci	R-9.5 ci	R-11.4 ci	R-13.3 ci
Metal building <sup>2</sup>	R-13	R-13	R-13	R-13	R-13 + R-13	R-13 + R-13	R-13 + R-13	R-13 + R-13
Metal framed	R-13	R-13	R-13	R-13	R-13 + R-3.8 ci	R-13 + R-3.8 ci	R-13 + R-7.5 ci	R-13 + R-7.5 ci
Wood framed and other	R-13	R-13	R-13	R-13	R-13	R-13	R-13	R-13 + R-7.5 ci
<b>Walls, Below Grade</b>								
Below grade wall <sup>4</sup>	NR	NR	NR	NR	NR	NR	R-7.5 ci	R-7.5 ci
<b>Floors</b>								
Mass	NR	R-5 ci	R-5 ci	R-10 ci	R-10 ci	R-10 ci	R-15 ci	R-15 ci
Joist/Framing	NR	R-19	R-19	R-19	R-19	R-30	R-30	R-30
<b>Slab-on-Grade Floors</b>								
Unheated Slabs	NR	NR	NR	NR	NR	NR	NR	R-10 for 24 in. below
Heated Slabs	R-7.5 for 12 in. below	R-7.5 for 12 in. below	R-7.5 for 12 in. below	R-7.5 for 12 in. below	R-7.5 for 24 in. below	R-10 for 36 in. below	R-10 for 36 in. below	R-10 for 48 in. below
<b>Opaque Doors</b>								
Swinging	U – 0.70	U – 0.70	U – 0.70	U – 0.70	U – 0.70	U – 0.70	U – 0.70	U – 0.50
Roll-up or sliding	U – 1.45	U – 1.45	U – 1.45	U – 1.45	U – 1.45	U – 0.50	U – 0.50	U – 0.50

For SI: 1 inch = 25.4 mm.

ci – Continuous Insulation

NR – No Requirement

1. Thermal blocks are a minimum R-5 of rigid insulation, which extends 1" beyond the width of the purlin on each side, perpendicular to the purlin.

2. Assembly descriptions can be found in Table 802.2.1.

3. R-5.7 ci may be substituted with an alternative method in compliance with 675 IAC 12-6-11.

4. When heated slabs are placed below grade, below-grade walls must meet the exterior insulation requirements for perimeter insulation according to the heated slab-on-grade construction.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-55)

**675 IAC 19-4-56 Table 802.3; building envelope requirements: fenestration**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 56. Insert Table 802.3 to read as follows:**

**TABLE 802.3  
BUILDING ENVELOPE REQUIREMENTS: FENESTRATION**

Climate Zone	1	2	3	4	5	6	7	8
<b>Vertical Fenestration (50% maximum)</b>								
<b>SHGC – All Frame Types</b>								
<b>SHGC: <math>PF \leq 0.25</math></b>	0.25	0.25	0.25	0.40	0.40	0.40	NR	NR
<b>SHGC: <math>0.25 &lt; PF &lt; 0.5</math></b>	0.33	0.33	0.33	NR	NR	NR	NR	NR
<b>SHGC: <math>PF &gt; 0.5</math></b>	0.40	0.40	0.40	NR	NR	NR	NR	NR
<b>U-factor</b>								
<b>Framing materials other than metal with or without metal reinforcement or cladding</b>								
<b>U-Factor</b>	1.20	0.75	0.65	0.40	0.35	0.35	0.35	0.35
<b>Metal framing with or without thermal break</b>								
<b>Curtain Wall/Storefront U-factor</b>	1.20	0.70	0.60	0.50	0.45	0.45	0.45	0.45
<b>Entrance Door U-factor</b>	1.20	1.10	0.90	0.85	0.80	0.80	0.80	0.80
<b>All Other U-factor</b>	1.20	0.75	0.65	0.55	0.55	0.55	0.50	0.50
<b>Skylights (5% maximum)</b>								
<b>Glass</b>								
<b>U-Factor</b>	1.60	1.05	0.90	0.60	0.60	0.60	0.60	0.60
<b>SHGC</b>	0.40	0.40	0.40	0.40	0.40	0.40	NR	NR
<b>Plastic</b>								
<b>U-Factor</b>	1.90	1.90	1.30	1.30	1.30	0.90	0.90	0.60
<b>SHGC</b>	0.35	0.35	0.35	0.62	0.62	0.62	NR	NR

NR = No requirement

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-56)

**675 IAC 19-4-57 Table 802.2.1; metal building assembly descriptions**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 57. Insert Table 802.2.1 to read as follows:**

**TABLE 802.2.1  
METAL BUILDING ASSEMBLY DESCRIPTIONS**

Roofs	Description	Reference
<b>R-19 + R-10</b>	<b>Filled cavity roof</b> Thermal blocks are a minimum, R-5 of rigid insulation, which extends 1 in. beyond the width of the purlin on each side, perpendicular to the purlin. This construction is R-10 insulation batts draped perpendicularly over the purlins, with enough looseness to allow R-19 batt to be laid above it, parallel to the purlins. Thermal blocks are then placed above the purlin/batt, and the roof deck is secured to the purlins.	ASHRAE/IESNA 90.1 Table A-2
<b>R-19</b>	<b>Standing seam with single insulation layer</b> Thermal blocks are a minimum R-5 of rigid insulation, which extends 1 in. beyond the width of the purlin on each side, perpendicular to the purlin.	ASHRAE/IESNA 90.1 Table A-2

	This construction is R-19 insulation batts draped perpendicularly over the purlins. Thermal blocks are then placed above the purlin/batt, and the roof deck is secured to the purlins.	
<b>Walls</b>		
<b>R-13</b>	Single insulation layer The first layer of R-13 insulation batts is installed continuously perpendicular to the girts and is compressed as the metal skin is attached to the girts.	ASHRAE/IESNA 90.1 Table A-9
<b>R-13 + R-13</b>	Double insulation layer The first layer of R-13 insulation batts is installed continuously perpendicular to the girts and is compressed as the metal skin is attached to the girts. The second layer of R-13 insulation batts is installed within the framing cavity.	ASHRAE/IESNA 90.1 Table A-9

**For SI: 1 inch = 25.4 mm.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-57)*

**675 IAC 19-4-58 Section 803.1; general**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 58.** Delete the text of subsection 803.1 and substitute as follows: Mechanical systems and equipment serving the building heating, cooling, or ventilating needs shall comply with Section 803.2 and either:

1. Section 803.3 (Simple systems), or
2. Section 803.4 (Complex systems).

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-58)*

**675 IAC 19-4-59 Section 803.1.1; compliance**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 59.** Delete Section 803.1.1 in its entirety without substitution. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-59)*

**675 IAC 19-4-60 Section 803.2; simple HVAC systems and equipment**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 60.** Delete subsection 803.2 in its entirety and substitute to read as follows: 803.2 Provisions applicable to all Mechanical systems (Mandatory). All mechanical systems shall meet the mandatory provisions of this section. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-60)*

**675 IAC 19-4-61 Section 803.2.1.1; equipment and system sizing**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 61.** Delete subsection 803.2.1.1 in its entirety without substitution. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-61)*

**675 IAC 19-4-62 Section 803.2.2; HVAC equipment performance requirements**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 62.** Delete subsection 803.2.2 and substitute to read as follows: 803.2.2 Equipment and system sizing. Heating and cooling equipment and systems capacity shall not exceed the loads calculated in accordance with Section 803.2.1. A single

piece of equipment providing both heating and cooling must satisfy this provision for one function with the capacity for the other function as small as possible, within available equipment options.

Exceptions: 1. Required standby equipment and systems provided with controls and devices that allow such systems or equipment to operate automatically only when the primary equipment is not operating.

2. Multiple units of the same equipment type with combined capacities exceeding the design load and provided with controls that have the capability to sequence the operation of each unit based on load.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-62)*

**675 IAC 19-4-63 Section 803.2.3; temperature and humidity controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 63. Delete subsection 803.2.3 and substitute to read as follows: 803.2.3 HVAC equipment performance requirements. Equipment shall meet the minimum efficiency requirements of Tables 803.2.3(1), 803.2.3(2), 803.2.3(3), 803.2.3(4), 803.2.3(5), 803.2.3(6), 803.2.3(7), 803.2.3(8), 803.2.3(9), 803.2.3(10), and 803.2.3(11) when tested and rated in accordance with the applicable test procedure. The efficiency shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the project owner that demonstrate that the combined efficiency of the specified components meets the requirements herein.**

**Exception:** Equipment listed in Table 803.2.3(7) not designed for operation at the applicable ARI Standard test conditions of 44°F (7°C) leaving chilled water temperature and 85°F (29°C) entering condenser water temperature shall have a minimum full load COP and IPLV rating as shown in Tables 803.2.3(8) through 803.2.3(10) as applicable. The table values are only applicable over the following full load design ranges:

**Leaving Chilled Water Temperature:** 40 to 48°F (4 to 9°C)

**Entering Condenser Water Temperature:** 75 to 85°F (24 to 29°C)

**Condensing Water Temperature Rise:** 5 to 15°F ( $\Delta 3$  to  $\Delta 8^\circ\text{C}$ )

**Chillers designed to operate outside of these ranges are not covered by this code.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-63)*

**675 IAC 19-4-64 Section 803.2.3.1; temperature controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 64. Delete subsection 803.2.3.1 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-64)*

**675 IAC 19-4-65 Section 803.2.3.2; heat pump supplementary heat**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 65. Delete subsection 803.2.3.2 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-65)*

**675 IAC 19-4-66 Section 803.2.3.3; humidity controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 66. Delete subsection 803.2.3.3 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-66)*

**675 IAC 19-4-67 Table 803.2.2(1); unitary air conditioners and condensing units, electrically operated, minimum efficiency requirements**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 67. Delete Table 803.2.2(1) in its entirety and substitute to read as follows:

TABLE 803.2.3(1)

UNITARY AIR CONDITIONERS AND CONDENSING UNITS, ELECTRICALLY OPERATED, MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SIZE CATEGORY	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY <sup>b</sup>	TEST PROCEDURE <sup>a</sup>
Air conditioners, Air-cooled	<65,000 Btu/h <sup>d</sup>	Split system	10.0 SEER	ARI 210/240
		Single package	9.7 SEER	
	≥ 65,000 Btu/h and < 135,000 Btu/h	Split system and single package	10.3 EER <sup>c</sup>	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Split system and single package	9.7 EER <sup>c</sup>	ARI 340/360
	≥ 240,000 Btu/h and < 760,000 Btu/h	Split system and single package	9.5 EER <sup>c</sup> 9.7 IPLV <sup>c</sup>	
	≥ 760,000 Btu/h	Split system and single package	9.2 EER <sup>c</sup> 9.4 IPLV <sup>c</sup>	
Air conditioners, Water and evaporatively cooled	< 65,000 Btu/h	Split system and single package	12.1 EER	ARI 210/240
	≥ 65,000 Btu/h and < 135,000 Btu/h	Split system and single package	11.5 EER <sup>c</sup>	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Split system and single package	11.0 EER <sup>c</sup>	ARI 340/360
	≥ 240,000 Btu/h	Split system and single package	11.0 EER <sup>c</sup> 10.3 IPLV <sup>c</sup>	

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

a. Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. IPLVs are only applicable to equipment with capacity modulation.

c. Deduct 0.2 from the required EERs and IPLVs for units with a heating section other than electric resistance heat.

d. Single-phase air-cooled air conditioners < 65,000 Btu/h are regulated by the National Appliance Energy Conservation Act of 1987 (NAECA), SEER values are those set by NAECA.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-67)

675 IAC 19-4-68 Table 803.2.2(2); unitary and applied heat pumps, electrically operated, minimum efficiency requirements

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 68. Delete Table 803.2.2(2) in its entirety and substitute to read as follows:

TABLE 803.2.3(2)

UNITARY AND APPLIED HEAT PUMPS, ELECTRICALLY OPERATED, MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SIZE CATEGORY	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY <sup>b</sup>	TEST PROCEDURE <sup>a</sup>
Air-cooled (Cooling mode)	< 65,000 Btu/h <sup>d</sup>	Split system	10.0 SEER	ARI 210/240
		Single package	9.7 SEER	
	≥ 65,000 Btu/h and < 135,000 Btu/h	Split system and single package	10.1 EER <sup>c</sup>	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Split system and single package	9.3 EER <sup>c</sup>	ARI 340/360

	≥ 240,000 Btu/h	Split system and single package	9.0 EER <sup>c</sup> 9.2 IPLV <sup>c</sup>	
Water source (Cooling mode)	< 17,000 Btu/h	86°F entering water	11.2 EER	ARI/ASHRAE-13256-1
	≥ 17,000 Btu/h and < 135,000 Btu/h	86°F entering water	12.0 EER	ARI/ASHRAE-13256-1
Ground water source (Cooling mode)	< 135,000 Btu/h	59°F entering water	16.2 EER	ARI/ASHRAE-13256-1
Ground source (Cooling mode)	< 135,000 Btu/h	77°F entering water	13.4 EER	ARI/ASHRAE 13256-1
Air-cooled (Heating mode)	< 65,000 Btu/h <sup>d</sup>	Split system	6.8 HSPF	ARI 210/240
		Single package	6.6 HSPF	
	≥ 65,000 Btu/h and < 135,000 Btu/h (Cooling capacity)	47°F db/43°F wb outdoor air	3.2 COP	ARI 340/360
	≥ 135,000 Btu/h (Cooling capacity)	47°F db/43°F wb outdoor air	3.1 COP	
Water source (Heating mode)	< 135,000 Btu/h (Cooling capacity)	68°F entering water	4.2 COP	ARI/ASHRAE-13256-1
Ground water source (Heating mode)	< 135,000 Btu/h (Cooling capacity)	50°F entering water	3.6 COP	ARI/ASHRAE-13256-1
Ground Source (Heating mode)	< 135,000 Btu/h (Cooling capacity)	32°F entering water	3.1 COP	ARI/ASHRAE-13256-1

For SI: °C = [(°F) - 32] / 1.8, 1 British thermal unit per hour = 0.2931 W.

db = dry-bulb temperature, °F

wb = wet-bulb temperature, °F

a. Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. IPLVs and Part load rating conditions are only applicable to equipment with capacity modulation.

c. Deduct 0.2 from the required EERs and IPLVs for units with a heating section other than electric resistance heat.

d. Single-phase air-cooled heat pumps < 65,000 Btu/h are regulated by the National Appliance Energy Conservation Act of 1987 (NAECA), SEER and HSPF values are those set by NAECA.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-68)

675 IAC 19-4-69 Table 803.2.2(3); packaged terminal air conditioners and packaged terminal heat pumps

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 69. Delete Table 803.2.2(3) in its entirety and substitute to read as follows:

TABLE 803.2.3(3)

PACKAGED TERMINAL AIR CONDITIONERS AND PACKAGED TERMINAL HEAT PUMPS

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY <sup>b</sup>	TEST PROCEDURE <sup>a</sup>
PTAC (Cooling mode) New construction	All capacities	95°F db outdoor air	12.5 - (0.213 • Cap/1000) EER	ARI 310/380
PTAC (Cooling mode) Replacements <sup>c</sup>	All capacities	95°F db outdoor air	10.9 - (0.213 • Cap/1000) EER	



PTHP (Cooling mode) New construction	All capacities	95°F db outdoor air	12.3 - (0.213 • Cap/1000) EER	
PTHP (Cooling mode) Replacements <sup>c</sup>	All capacities	95°F db outdoor air	10.8 - (0.213 • Cap/1000) EER	
PTHP (Heating mode) New construction	All capacities	_____	3.2 - (0.026 • Cap/1000) COP	
PTHP (Heating mode) Replacements <sup>c</sup>	All capacities	_____	2.9 - (0.026 • Cap/1000) COP	

For SI: °C - [(°F) - 32] / 1.8, 1 British thermal unit per hour - 0.2931 W.

db = dry-bulb temperature, °F

wb = wet-bulb temperature, °F

a. Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Cap means the rated cooling capacity of the product in Btu/h. If the unit's capacity is less than 7,000 Btu/h, use 7,000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

c. Replacement units must be factory labeled as follows: "MANUFACTURED FOR REPLACEMENT APPLICATIONS ONLY: NOT TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS." Replacement efficiencies apply only to units with existing sleeves less than 16 inches (406 mm) high and less than 42 inches (1,067 mm) wide.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-69)

675 IAC 19-4-70 Table 803.2.2(4); warm air furnaces and combination warm air furnaces/air conditioning units, warm air duct furnaces and unit heaters, minimum efficiency requirements

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 70. Delete Table 803.2.2(4) in its entirety and substitute to read as follows:

TABLE 803.2.3(4)

WARM AIR FURNACES AND COMBINATION WARM AIR FURNACES/AIR CONDITIONING UNITS, WARM AIR DUCT FURNACES AND UNIT HEATERS, MINIMUM EFFICIENCY REQUIREMENTS

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY <sup>d, e</sup>	TEST PROCEDURE <sup>a</sup>
Warm air furnaces, gas fired	< 225,000 Btu/h	_____	78% AFUE or 80% E <sub>t</sub> <sup>c</sup>	DOE 10 CFR Part 430 or ANSI Z21.47
	≥ 225,000 Btu/h	Maximum capacity <sup>c</sup>	80% E <sub>t</sub> <sup>f</sup>	ANSI Z21.47
Warm furnaces, oil fired	< 225,000 Btu/h	_____	78% AFUE or 80% E <sub>t</sub> <sup>c</sup>	DOE 10 CFR Part 430 or UL 727
	≥ 225,000 Btu/h	Maximum capacity <sup>b</sup>	81% E <sub>t</sub> <sup>g</sup>	UL 727
Warm air duct furnaces, gas fired	All capacities	Maximum capacity <sup>b</sup>	80% E <sub>c</sub>	ANSI Z83.9
Warm air unit heaters, gas fired	All capacities	Maximum capacity <sup>b</sup>	80% E <sub>c</sub>	ANSI Z83.8
Warm air unit heaters,	All capacities	Maximum capacity <sup>b</sup>	80% E <sub>c</sub>	UL 731

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

- Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.
- Minimum and maximum ratings as provided for and allowed by the unit's controls.
- Combination units not covered by the National Appliance Energy Conservation Act of 1987 (NAECA) (3-phase power or cooling capacity greater than or equal to 65,000 Btu/h [19 kW]) shall comply with either rating.
- $E_t$  = Thermal efficiency. See test procedure for detailed discussion.
- $E_c$  = Combustion efficiency (100% less flue losses). See test procedure for detailed discussion.
- $E_c$  = Combustion efficiency. Units must also include an IID, have jackets not exceeding 0.75 percent of the input rating, and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furnaces where combustion air is drawn from the conditioned space.
- $E_t$  = Thermal efficiency. Units must also include an IID, have jacket losses not exceeding 0.75 percent of the input rating and have either power venting or a flue damper. A vent damper is an acceptable alternative to a flue damper for those furnaces where combustion air is drawn from the conditioned space.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-70)

675 IAC 19-4-71 Table 803.2.2(5); boilers, gas-fired and oil-fired, minimum efficiency requirements

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 71. Delete Table 803.2.2(5) in its entirety and substitute to read as follows:

TABLE 803.2.3(5)

**BOILERS, GAS-FIRED AND OIL-FIRED, MINIMUM EFFICIENCY REQUIREMENTS**

EQUIPMENT TYPE <sup>f</sup>	SIZE CATEGORY (INPUT)	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY <sup>c, d, e</sup>	TEST PROCEDURE <sup>a</sup>
Boilers, Gas-fired	< 300,000 Btu/h	Hot water	80% AFUE	DOE 10 CFR Part 430
		Steam	75% AFUE	
	≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h	Minimum capacity <sup>b</sup>	75% $E_t$	H.I. HBS
	> 2,500,000 Btu/h <sup>f</sup>	Hot water	80% $E_c$	
		Steam	80% $E_c$	
Boilers, Oil-fired	< 300,000 Btu/h	_____	80% AFUE	DOE 10 CFR Part 430
	≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h	Minimum capacity <sup>b</sup>	78% $E_t$	H.I. HBS
	> 2,500,000 Btu/h <sup>f</sup>	Hot water	83% $E_c$	
		Steam	83% $E_c$	
Boilers, Oil-fired (Residual)	≥ 300,000 Btu/h and ≤ 2,500,000 Btu/h	Minimum capacity <sup>b</sup>	78% $E_t$	H.I. HBS
	> 2,500,000 Btu/h <sup>f</sup>	Hot water	83% $E_c$	
		Steam	83% $E_c$	

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

- Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.
- Minimum ratings as provided for and allowed by the unit's controls.
- $E_c$  = Combustion efficiency (100 percent flue losses).
- $E_t$  = Thermal efficiency.

e. Alternative test procedures used at the manufacturer's option are ASME PTC-4.1 for units greater than 5,000,000 Btu/h input, or ANSI Z21.13 for units greater than or equal to 300,000 Btu/h and less than or equal to 2,500,000 Btu/h input.

f. These requirements apply to boilers with rated input of 8,000,000 Btu/h or less that are not packaged boilers and to all packaged boilers. Minimum efficiency requirements for boilers cover all capacities of packaged boilers.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-71)*

**675 IAC 19-4-72 Section 803.2.4; hydronic system controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 72.** Delete subsection 803.2.4 in its entirety and substitute to read as follows: **803.2.4 Thermostatic controls.** The supply of heating and cooling energy to each zone shall be controlled by individual thermostatic controls capable of responding to temperature within the zone. Where humidification or dehumidification or both is provided, at least one humidity control device shall be provided for each humidity control system.

**Exception:** Independent perimeter systems that are designed to offset only building envelope heat losses or gains or both serving one or more perimeter zones also served by an interior system provided:

1. The perimeter system includes at least one thermostatic control zone for each building exposure having exterior walls facing only one orientation (within +/- 45 degrees) (0.8 rad) for more than 50 contiguous feet (15.2 m); and,
2. The perimeter system heating and cooling supply is controlled by a thermostat(s) located within the zone(s) served by the system.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-72)*

**675 IAC 19-4-73 Section 803.2.4.1; humidity controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 73.** Insert subsection 803.2.4.1 to read as follows: **803.2.4.1 Humidity controls.** When humidistats are installed, they shall have the capability to prevent the use of fossil fuel or electric power to achieve a humidity below 60 percent when the system controlled is cooling and above 30 percent when the system controlled is heating.

**Exceptions:** 1. Systems serving spaces where specific humidity levels are required to satisfy process needs, such as computer rooms, museums, surgical suites, and buildings with refrigerating systems, such as supermarkets, refrigerated warehouses, and ice arenas.

2. Systems where humidity is removed as the result of the use of a desiccant system with energy recovery.

3. Reheat systems utilizing site-recovered (including condenser heat) or site solar energy sources.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-73)*

**675 IAC 19-4-74 Section 803.2.4.2; heat pump supplementary heat**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 74.** Insert subsection 803.2.4.2 to read as follows: **803.2.4.2 Heat pump supplementary heat.** Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump can meet the heating load. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-74)*

**675 IAC 19-4-75 Section 803.2.4.3; set point overlap restriction**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 75.** Insert subsection 803.2.4.3 to read as follows: **803.2.4.3 Set point overlap restriction.** Where used to control both heating and cooling, zone thermostatic controls shall provide a temperature range or deadband of at least 5°F ( $\Delta 2.8^{\circ}\text{C}$ ) within which the supply of heating and cooling energy to the zone is capable of being shut off or reduced to a minimum. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-75)*

**675 IAC 19-4-76 Section 803.2.4.4 off-hour controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 76. Insert subsection 803.2.4.4 to read as follows: 803.2.4.4 Off-hour controls. Each zone shall be provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.**

**Exceptions: 1. Zones that will be operated continuously.**

**2. Zones with a full HVAC load demand not exceeding 6,800 Btu/h (2 kW) and having a readily accessible manual shut-off switch.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-76)*

**675 IAC 19-4-77 Section 803.2.4.4.1; thermostatic setback capabilities**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 77. Insert subsection 803.2.4.4.1 to read as follows: 803.2.4.4.1. Thermostatic setback capabilities. Thermostatic setback controls shall have the capability to set back or temporarily operate the system to maintain zone temperatures down to 55°F (13°C) or up to 85°F (29°C).** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-77)*

**675 IAC 19-4-78 Section 803.2.4.4.2; automatic setback and shutdown capabilities**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 78. Insert subsection 803.2.4.4.2 to read as follows: 803.2.4.4.2. Automatic setback and shutdown capabilities. Automatic time clock or programmable controls shall be capable of starting and stopping the system for seven different daily schedules per week and retaining their programming and time setting during a loss of power for at least 10 hours. Additionally, the controls shall have: a manual override that allows temporary operation of the system for up to 2 hours; a manually operated timer capable of being adjusted to operate the system for up to 2 hours; or an occupancy sensor.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-78)*

**675 IAC 19-4-79 Section 803.2.4.5; shut-off damper controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 79. Insert subsection 803.2.4.5 to read as follows: 803.2.4.5 Shut-off damper controls. Both outdoor air supply and exhaust ducts shall be equipped with gravity or motorized dampers that will automatically shut when the systems or spaces served are not in use.**

**Exceptions: 1. Gravity dampers shall be permitted in buildings less than three stories in height.**

**2. Gravity dampers shall be permitted for outside air intake or exhaust airflows of 300 cfm or less.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-79)*

**675 IAC 19-4-80 Section 803.2.5.1; energy recovery ventilation systems**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 80. Delete subsection 803.2.5.1 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-80)*

**675 IAC 19-4-81 Section 803.2.6; cooling with outdoor air**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 81. Insert subsection 803.2.6 to read as follows: 803.2.6 Ventilation. Ventilation, either natural or mechanical, shall be provided in accordance with 675 IAC 18. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by 675 IAC 18.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-81)*

**675 IAC 19-4-82 Section 803.2.6.1; energy recovery ventilation systems**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 82.** Insert subsection 803.2.6.1 to read as follows: 803.2.6.1 Energy recovery ventilation systems. Individual fan systems that have both a design supply air capacity of 5,000 cfm (2.36 m<sup>3</sup>/s) or greater and a minimum outside air supply of 70 percent or greater of the design supply air quantity shall have an energy recovery system that provides a change in the enthalpy of the outdoor air supply of 50 percent or more of the difference between the outdoor air and return air at design conditions. Provision shall be made to bypass or control the energy recovery system to permit cooling with outdoor air where cooling with outdoor air is required.

**Exceptions:** An energy recovery ventilation system shall not be required in any of the following conditions:

1. Where energy recovery systems are prohibited by 675 IAC 18.
2. Laboratory fume hood systems with a total exhaust rate of 15,000 cfm (7.08 m<sup>3</sup>/s) or less.
3. Laboratory fume hood systems with a total exhaust rate greater than 15,000 cfm (7.08 m<sup>3</sup>/s) that include at least one of the following features:
  - 3.1 Variable air volume hood exhaust and room supply systems capable of reducing exhaust and makeup air volume to 50 percent or less of design values.
  - 3.2 Direct makeup (auxiliary) air supply equal to at least 75 percent of the exhaust rate, heated no warmer than 2°F (1.1°C) below room set point, cooled to no cooler than 3°F (1.7°C) above room set point, no humidification added, and no simultaneous heating and cooling used for dehumidification control.
4. Systems serving spaces that are not cooled and are heated to less than 60°F (15.5°C).
5. Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.
6. Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64°F (17.7°C).
7. Systems requiring dehumidification that employ series-style energy recovery coils wrapped around the cooling coil.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-82)*

**675 IAC 19-4-83 Section 803.2.7; shut-off dampers**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 83.** Delete subsection 803.2.7 in its entirety and substitute to read as follows: 803.2.7 Hydronic system controls. Hydronic systems of at least 300,000 Btu/h (87,930 W) design output capacity supplying heated and chilled water to comfort conditioning systems shall include controls that meet the requirements of Section 803.4.3. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-83)*

**675 IAC 19-4-84 Table 803.2.6(1); economizer requirements**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 84.** Delete Table 803.2.6(1) in its entirety without substitution. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-84)*

**675 IAC 19-4-85 Table 803.2.6(2); equipment efficiency performance exception for economizers**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 85.** Delete Table 803.2.6(2) in its entirety without substitution. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-85)*

**675 IAC 19-4-86 Section 803.2.8; duct and plenum insulation and sealing**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 86.** Amend subsection 803.2.8 to read as follows: 803.2.8 Duct and plenum insulation and sealing. All supply and return air ducts and plenums shall be insulated with a minimum of R-5 insulation when located in unconditioned spaces and with

a minimum of R-8 insulation when located outside the building. When located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8 insulation.

Exceptions: 1. When located within equipment.

2. When the design temperature difference between the interior and exterior of the duct or plenum does not exceed 15°F (8°C).

All joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, or tapes. Tapes and mastics used to seal ductwork shall be listed and labeled in accordance with UL 181A and shall be marked “181A-P” for pressure-sensitive tape, “181A-M” for mastic or “181A-H” for heat-sensitive tape. Tapes and mastics used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked “181B-FX” for pressure-sensitive tape or “181B-M” for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Unlisted duct tape is not permitted as a sealant on any duct.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-86)*

**675 IAC 19-4-87 Section 803.2.8.1; duct construction**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 87. Amend subsection 803.2.8.1 to read as follows: **803.2.8.1 Duct construction.** Ductwork shall be constructed and erected in accordance with 675 IAC 18. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-87)*

**675 IAC 19-4-88 Section 803.2.8.1.1; high-pressure and medium-pressure duct systems**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 88. Amend subsection 803.2.8.1.1 to read as follows: **803.2.8.1.1 Low-pressure duct systems.** All longitudinal and transverse joints, seams, and connections of supply and return ducts operating at a static pressure less than or equal to 2 inches w.g. (500 Pa) shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, or tapes installed in accordance with the manufacturer’s installation instructions. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with 675 IAC 18.

Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. (500 Pa) pressure classification.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-88)*

**675 IAC 19-4-89 Section 803.2.8.1.2; low-pressure duct systems**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 89. Amend subsection 803.2.8.1.2 to read as follows: **803.2.8.1.2 Medium-pressure duct systems.** All ducts and plenums designed to operate at a static pressures greater than 2 inches w.g. (500 Pa) but less than 3 inches w.g. (750 Pa) shall be insulated and sealed in accordance with Section 803.2.8. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with 675 IAC 18. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-89)*

**675 IAC 19-4-90 Section 803.2.8.1.3; high-pressure duct systems**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 90. Insert subsection 803.2.8.1.3 to read as follows: **803.2.8.1.3 High-pressure duct systems.** Ducts designed to operate at static pressures in excess of 3 inches w.g. (746 Pa) shall be insulated and sealed in accordance with Section 803.2.8. In addition, ducts and plenums shall be leak-tested in accordance with the SMACNA-85 with the rate of air leakage (CL) less than or equal to 6.0 as determined in accordance with Equation 8-2 of this code.

$$CL = F \times P^{0.65} \text{ (Equation 8-2)}$$

where: F = The measured leakage rate in cfm per 100 square feet of duct surface.

P = The static pressure of the test.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-90)

**675 IAC 19-4-91 Section 803.2.9; piping insulation**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 91. Delete 803.2.9 in its entirety and substitute to read as follows: 803.2.9 Piping insulation. All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table 803.2.9.**

**Exceptions:** 1. Factory-installed piping within HVAC equipment tested and rated in accordance with a test procedure referenced by this code.

2. Piping that conveys fluids that have a design operating temperature range between 55°F (13°C) and 105°F (41°C).

3. Piping that conveys fluids that have not been heated or cooled through the use of fossil fuels or electric power.

4. Runout piping not exceeding 4 feet (1,219 mm) in length and 1 inch (25 mm) in diameter between the control valve and HVAC coil.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-91)

**675 IAC 19-4-92 Table 803.2.9; minimum pipe insulation**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 92. Insert Table 803.2.9 to read as follows:**

**TABLE 803.2.9  
MINIMUM PIPE INSULATION<sup>a</sup>  
(thickness in inches)**

FLUID	NOMINAL PIPE DIAMETER	
	≤ 1.5"	>1.5"
Steam	1½	3
Hot water	1	2
Chilled water, brine or refrigerant	1	1½

**For SI: 1 inch = 25.4 mm, British thermal unit per inch/h • ft<sup>2</sup> • °F = W per 25 mm/K • m<sup>2</sup>.**

**a. Based on insulation having a conductivity (k) not exceeding 0.27 Btu per inch/h • ft<sup>2</sup> • °F.**

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-92)

**675 IAC 19-4-93 Section 803.2.9.1; air system balancing**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 93. Insert subsection 803.2.9.1 to read as follows: 803.2.9.1 Air system balancing. Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of 675 IAC 18. Discharge dampers are prohibited on constant volume fans and variable volume fans with motors 25 hp (18.6 kW) and larger. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-93)**

**675 IAC 19-4-94 Section 803.2.9.2; hydronic system balancing**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 94. Insert subsection 803.2.9.2 to read as follows: 803.2.9.2 Hydronic system balancing. Individual hydronic heating and cooling coils shall be equipped with means for balancing and pressure test connections. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-94)**

**675 IAC 19-4-95 Section 803.2.9.3; manuals**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 95. Insert subsection 803.2.9.3 to read as follows: 803.2.9.3 Manuals.** The construction documents shall require that an operating and maintenance manual be provided to the building owner by the mechanical contractor. The manual shall include, at least, the following:

1. Equipment capacity (input and output) and required maintenance actions.
2. Equipment operation and maintenance manuals.
3. HVAC system control maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined setpoints shall be permanently recorded on control drawings, at control devices, or for digital control system programming comments.
4. A complete written narrative of how each system is intended to operate.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-95)*

**675 IAC 19-4-96 Section 803.2.10; HVAC system completion**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 96. Insert subsection 803.2.10 to read as follows: 803.2.10 HVAC system completion.** Prior to occupancy, the design professional shall provide evidence of system completion in accordance with Sections 803.2.10.1 through 803.2.10.3. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-96)*

**675 IAC 19-4-97 Section 803.3; complex HVAC systems and equipment**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 97. Delete subsection 803.3 without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-97)*

**675 IAC 19-4-98 Section 803.3.1; calculation of heating and cooling loads**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 98. Delete subsection 803.3.1 and substitute to read as follows: 803.3.1 Economizers.** Supply air economizers shall be provided on each cooling system as shown in Table 803.3.1(1).

Economizers shall be capable of providing 100 percent outside air, even if additional mechanical cooling is required to meet the cooling load of the building. Systems shall provide a means to relieve excess outdoor air during economizer operation to prevent overpressurizing the building. The relief air outlet shall be located to avoid recirculation into the building. Where a single room or space is supplied by multiple air systems, the aggregate capacity of those systems shall be used in applying this requirement.

**Exception:** Systems with air or evaporatively cooled condensers and which serve spaces with open case refrigeration or that require filtration equipment in order to meet the minimum ventilation requirements of 675 IAC 18.

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-98)*

**675 IAC 19-4-99 Section 803.3.1.1; equipment and system sizing**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 99. Delete subsection 803.3.1.1 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-99)*

**675 IAC 19-4-100 Table 803.3.1(1); economizer requirements**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 100. Insert Table 803.3.1(1) to read as follows:**

**TABLE 803.3.1(1)  
ECONOMIZER REQUIREMENTS**

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CLIMATE ZONES	ECONOMIZER REQUIREMENT
5A	Economizers on All Cooling Systems $\geq$ 135,000 Btu/h

For SI: 1 British thermal unit per hour = 0.293 W.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-100)

**675 IAC 19-4-101 Section 803.3.2; HVAC equipment performance requirements**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 101. Delete subsection 803.3.2 in its entirety. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-101)

**675 IAC 19-4-102 Section 803.3; HVAC system controls**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 102. Delete subsection 803.3 in its entirety. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-102)

**675 IAC 19-4-103 Table 803.3.2(1); condensing units, electrically operated, minimum efficiency requirements**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 103. Delete Table 803.3.2(1) and substitute to read as follows:

**TABLE 803.2.3(6)**

**CONDENSING UNITS, ELECTRICALLY OPERATED, MINIMUM EFFICIENCY REQUIREMENTS**

EQUIPMENT TYPE	SIZE CATEGORY	MINIMUM EFFICIENCY <sup>b</sup>	TEST PROCEDURE <sup>a</sup>
Condensing units, air-cooled	$\geq$ 135,000 Btu/h	10.1 EER 11.2 IPLV	ARI 365
Condensing units Water or evaporatively cooled	$\geq$ 135,000 Btu/h	13.1 EER 13.1 IPLV	

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

a. Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. IPLVs are only applicable to equipment with capacity modulation.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-103)

**675 IAC 19-4-104 Table 803.3.2(2); water chilling packages, minimum efficiency requirements**

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 104. Delete Table 803.3.2(2) and substitute to read as follows:

**TABLE 803.2.3(7)**

**WATER CHILLING PACKAGES, MINIMUM EFFICIENCY REQUIREMENTS**

EQUIPMENT TYPE	SIZE CATEGORY	MINIMUM EFFICIENCY <sup>b</sup>	TEST PROCEDURE <sup>a</sup>
Air-cooled, with condenser, Electrically operated	< 150 tons	2.80 COP 2.80 IPLV	ARI 550/590
	$\geq$ 150 tons	2.50 COP 2.50 IPLV	
Air-cooled, without condenser, Electrically operated	All capacities	3.10 COP 3.10 IPLV	ARI 550/590

Water-cooled, Electrically operated, Positive displacement (reciprocating)	All capacities	4.20 COP 4.65 IPLV	
Water-cooled, Electrically operated, Positive displacement (rotary screw and scroll)	< 150 tons	4.45 COP 4.50 IPLV	ARI 550/590
	≥ 150 tons and < 300 tons	4.90 COP 4.95 IPLV	
	≥ 300 tons	5.50 COP 5.60 IPLV	
Water-cooled, Electrically operated, centrifugal	< 150 tons	5.00 COP 5.00 IPLV	ARI 550/590
	≥ 150 tons and < 300 tons	5.55 COP 5.55 IPLV	
	≥ 300 tons	6.10 COP 6.10 IPLV	
Air-cooled, absorption single effect	All capacities	0.60 COP	ARI 560
Water-cooled, absorption single effect	All capacities	0.70 COP	
Absorption double effect, indirect-fired	All capacities	1.00 COP 1.05 IPLV	
Absorption double effect, direct-fired	All capacities	1.00 COP 1.00 IPLV	

For SI:

1 ton = 3.517 kW

°C = [(°F) - 32]/1.8

a. Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. The chiller equipment requirements do not apply for chillers used in low temperature applications where the design leaving fluid temperature is less than or equal to 40°F.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-104)

675 IAC 19-4-105 Table 803.3.2(3); COPs and IPLVs for nonstandard centrifugal chillers < 150 tons

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 105. Delete Table 803.3.2(3) and substitute to read as follows:

TABLE 803.2.3(8)

COPs AND IPLVs FOR NONSTANDARD CENTRIFUGAL CHILLERS < 150 TONS

CENTRIFUGAL CHILLERS < 150 TONS								
COP <sub>std</sub> = 5.4								
Leaving chilled water temperature (°F)	Entering condenser water temperature (°F)	Lift <sup>a</sup> (°F)	Condenser flow rate					
			2 gpm/ton	2.5 gpm/ton	3 gpm/ton	4 gpm/ton	5 gpm/ton	6 gpm/ton
			Required COP and IPLV					
46	75	29	6.00	6.27	6.48	6.80	7.03	7.20
45	75	30	5.92	6.17	6.37	6.66	6.87	7.02
44	75	31	5.84	6.08	6.26	6.53	6.71	6.86
43	75	32	5.75	5.99	6.16	6.40	6.58	6.71
42	75	33	5.67	5.90	6.06	6.29	6.45	6.57
41	75	34	5.59	5.82	5.98	6.19	6.34	6.44

46	80	34	5.59	5.82	5.98	6.19	6.34	6.44
40	75	35	5.50	5.74	5.89	6.10	6.23	6.33
45	80	35	5.50	5.74	5.89	6.10	6.23	6.33
44	80	36	5.41	5.66	5.81	6.01	6.13	6.22
43	80	37	5.31	5.57	5.73	5.92	6.04	6.13
42	80	38	5.21	5.48	5.64	5.84	5.95	6.04
41	80	39	5.09	5.39	5.56	5.76	5.87	5.95
46	85	39	5.09	5.39	5.56	5.76	5.87	5.95
40	80	40	4.96	5.29	5.47	5.67	5.79	5.86
45	85	40	4.96	5.29	5.47	5.67	5.79	5.86
44	85	41	4.83	5.18	5.40	5.59	5.71	5.78
43	85	42	4.68	5.07	5.28	5.50	5.62	5.70
42	85	43	4.51	4.94	5.17	5.41	5.54	5.62
41	85	44	4.33	4.80	5.05	5.31	5.45	5.53
40	85	45	4.13	4.65	4.92	5.21	5.35	5.44
Condenser $\Delta T^b$			14.04	11.23	9.36	7.02	5.62	4.68

For SI:  $^{\circ}\text{C} = [(^{\circ}\text{F}) - 32] / 1.8$ , 1 gallon per minute = 3.785 L/min., 1 ton = 12,000 British thermal unit per hour = 3.517 kW.

a. Lift = Entering condenser water temperature ( $^{\circ}\text{F}$ ) - Leaving chilled water temperature ( $^{\circ}\text{F}$ ).

b. Condenser  $\Delta T$  = Leaving condenser water temperature ( $^{\circ}\text{F}$ ) - Entering condenser water temperature ( $^{\circ}\text{F}$ ).

$$K_{\text{adj}} = 6.1507 - 0.30244(X) + 0.0062692(X)^2 - 0.000045595(X)$$

where: X = Condenser  $\Delta T$  + Lift

$$\text{COP}_{\text{adj}} = K_{\text{adj}} \times \text{COP}_{\text{std}}$$

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-105)

675 IAC 19-4-106 Table 803.3.2(4); COPs and IPLVs for nonstandard centrifugal chillers  $\geq 150$  tons,  $\leq 300$  tons

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 106. Delete Table 803.3.2(4) and substitute to read as follows:

TABLE 803.2.3(9)

**COPs AND IPLVs FOR NONSTANDARD CENTRIFUGAL CHILLERS  $\geq 150$  TONS,  $\leq 300$  TONS**

CENTRIFUGAL CHILLERS $\geq 150$ Tons, $\leq 300$ Tons								
$\text{COP}_{\text{std}} = 5.55$								
Leaving chilled water temperature ( $^{\circ}\text{F}$ )	Entering condenser water temperature ( $^{\circ}\text{F}$ )	Lift <sup>a</sup> ( $^{\circ}\text{F}$ )	Condenser flow rate					
			2 gpm/ton	2.5 gpm/ton	3 gpm/ton	4 gpm/ton	5 gpm/ton	6 gpm/ton
			Required COP and IPLV					
46	75	29	6.17	6.44	6.66	6.99	7.23	7.40
45	75	30	6.08	6.34	6.54	6.84	7.06	7.22
44	75	31	6.00	6.24	6.43	6.71	6.90	7.05
43	75	32	5.91	6.15	6.33	6.58	6.76	6.89
42	75	33	5.83	6.07	6.23	6.47	6.63	6.75
41	75	34	5.74	5.98	6.14	6.36	6.51	6.62
46	80	34	5.74	5.98	6.14	6.36	6.51	6.62
40	75	35	5.65	5.90	6.05	6.26	6.40	6.51
45	80	35	5.65	5.90	6.05	6.26	6.40	6.51
44	80	36	5.56	5.81	5.97	6.17	6.30	6.40
43	80	37	5.46	5.73	5.89	6.08	6.21	6.30

42	80	38	5.35	5.64	5.8	6.00	6.12	6.20
41	80	39	5.23	5.54	5.71	5.91	6.03	6.11
46	85	39	5.23	5.54	5.71	5.91	6.03	6.11
40	80	40	5.10	5.44	5.62	5.83	5.95	6.03
45	85	40	5.10	5.44	5.62	5.83	5.95	6.03
44	85	41	4.96	5.33	5.55	5.74	5.86	5.94
43	85	42	4.81	5.21	5.42	5.66	5.78	5.86
42	85	43	4.63	5.08	5.31	5.56	5.69	5.77
41	85	44	4.45	4.93	5.19	5.46	5.60	5.69
40	85	45	4.24	4.77	5.06	5.35	5.50	5.59
Condenser $\Delta T^b$			14.04	11.23	9.36	7.02	5.62	4.68

For SI:  $^{\circ}\text{C} = [(^{\circ}\text{F}) - 32] / 1.8$ , 1 gallon per minute = 3.785 L/min., 1 ton = 12,000 British thermal unit per hour = 3.517 kW.

a. Lift = Entering condenser water temperature ( $^{\circ}\text{F}$ ) - Leaving chilled water temperature ( $^{\circ}\text{F}$ ).

b. Condenser  $\Delta T$  = Leaving condenser water temperature ( $^{\circ}\text{F}$ ) - Entering condenser water temperature ( $^{\circ}\text{F}$ ).

$$K_{\text{adj}} = 6.1507 - 0.30244(X) + 0.0062692(X)^2 - 0.000045595(X)$$

where: X = Condenser  $\Delta T$  + Lift

$$\text{COP}_{\text{adj}} = K_{\text{adj}} \times \text{COP}_{\text{std}}$$

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-106)

675 IAC 19-4-107 Table 803.3.2(5); COPs and IPLVs for nonstandard centrifugal chillers > 300 tons

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 107. Delete Table 803.3.2(5) and substitute to read as follows:

TABLE 803.2.3(10)

COPs AND IPLVs FOR NONSTANDARD CENTRIFUGAL CHILLERS > 300 TONS

CENTRIFUGAL CHILLERS > 300 Tons								
COP <sub>std</sub> = 6.1								
Leaving chilled water temperature ( $^{\circ}\text{F}$ )	Entering condenser water temperature ( $^{\circ}\text{F}$ )	Lift <sup>a</sup> ( $^{\circ}\text{F}$ )	Condenser flow rate					
			2 gpm/ton	2.5 gpm/ton	3 gpm/ton	4 gpm/ton	5 gpm/ton	6 gpm/ton
			Required COP and IPLV					
46	75	29	6.80	7.11	7.35	7.71	7.97	8.16
45	75	30	6.71	6.99	7.21	7.55	7.78	7.96
44	75	31	6.61	6.89	7.09	7.40	7.61	7.77
43	75	32	6.52	6.79	6.98	7.26	7.45	7.60
42	75	33	6.43	6.69	6.87	7.13	7.31	7.44
41	75	34	6.33	6.60	6.77	7.02	7.18	7.30
46	80	34	6.33	6.60	6.77	7.02	7.18	7.30
40	75	35	6.23	6.50	6.68	6.91	7.06	7.17
45	80	35	6.23	6.50	6.68	6.91	7.06	7.17
44	80	36	6.13	6.41	6.58	6.81	6.95	7.05
43	80	37	6.02	6.31	6.49	6.71	6.85	6.94
42	80	38	5.90	6.21	6.40	6.61	6.75	6.84
41	80	39	5.77	6.11	6.30	6.52	6.65	6.74
46	85	39	5.77	6.11	6.30	6.52	6.65	6.74
40	80	40	5.63	6.00	6.20	6.43	6.56	6.65

45	85	40	5.63	6.00	6.20	6.43	6.56	6.65
44	85	41	5.47	5.87	6.10	6.33	6.47	6.55
43	85	42	5.30	5.74	5.98	6.24	6.37	6.46
42	85	43	5.11	5.60	5.86	6.13	6.28	6.37
41	85	44	4.90	5.44	5.72	6.02	6.17	6.27
40	85	45	4.68	5.26	5.58	5.90	6.07	6.17
Condenser $\Delta T^b$			14.04	11.23	9.36	7.02	5.62	4.68

For SI:  $^{\circ}\text{C} = [(^{\circ}\text{F}) - 32] / 1.8$ , 1 gallon per minute = 3.785 L/min., 1 ton = 12,000 British thermal unit per hour = 3.517 kW.

a. Lift = Entering condenser water temperature ( $^{\circ}\text{F}$ ) - Leaving chilled water temperature ( $^{\circ}\text{F}$ ).

b. Condenser  $\Delta T$  = Leaving condenser water temperature ( $^{\circ}\text{F}$ ) - Entering condenser water temperature ( $^{\circ}\text{F}$ ).

$$K_{\text{adj}} = 6.1507 - 0.030244(X) + 0.0062692(X)^2 - 0.000045595(X)$$

where: X = Condenser  $\Delta T$  + Lift

$$\text{COP}_{\text{adj}} = K_{\text{adj}} \times \text{COP}_{\text{std}}$$

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-107)

675 IAC 19-4-108 Table 803.3.2(6); performance requirements for heat rejection equipment

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 108. Delete Table 803.3.2(6) and substitute to read as follows:

TABLE 803.2.3(11)

PERFORMANCE REQUIREMENTS FOR HEAT REJECTION EQUIPMENT

EQUIPMENT TYPE	TOTAL SYSTEM HEAT REJECTION CAPACITY AT RATED CONDITIONS	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED <sup>a, b</sup>	TEST PROCEDURE <sup>c</sup>
Propeller or axial fan cooling towers	All	95°F entering water 85°F leaving water 75°F wb outdoor air	$\geq 38.2$ gpm/hp	CTI ATC-105 and CTI STD-201
Centrifugal fan cooling towers	All	95°F entering water 85°F leaving water 75°F wb outdoor air	$\geq 20.0$ gpm/hp	CTI ATC-105 and CTI STD-201
Air-cooled condensers	All	125°F condensing temperature R-22 test fluid 190°F entering gas temperature 15°F subcooling 95°F entering db	$\geq 176,000$ Btu/h • hp (69 COP)	ARI 460

For SI:  $^{\circ}\text{C} = [(^{\circ}\text{F}) - 32] / 1.8$ , 1 British thermal unit per hour = 0.2931 W, 1 gallon per minute per horsepower = 0.846 L/s • kW.

wb = wet-bulb temperature,  $^{\circ}\text{F}$

a. For purposes of this table, cooling tower performance is defined as the maximum flow rating of the tower units (gpm) divided by the fan nameplate rated motor power units (hp).

b. For purposes of this table, air-cooled condenser performance is defined as the heat rejected from the refrigerant units (Btu/h) divided by the fan nameplate rated motor power units (hp).

c. Chapter 10 contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-108)

675 IAC 19-4-109 Section 803.3.4; requirements for complex mechanical systems serving multiple zones

**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 109. Delete subsection 803.3.4 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-109)*

**675 IAC 19-4-110 Section 803.3.5; ventilation**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 110. Delete subsection 803.3.5 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-110)*

**675 IAC 19-4-111 Section 803.3.6; duct and plenum insulation and sealing**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 111. Delete subsection 803.3.6 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-111)*

**675 IAC 19-4-112 Section 803.3.7; piping insulation**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 112. Delete subsection 803.3.7 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-112)*

**675 IAC 19-4-113 Table 803.3.7; minimum pipe insulation**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 113. Delete Table 803.3.7 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-113)*

**675 IAC 19-4-114 Section 803.3.8; HVAC system completion**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 114. Delete subsection 803.3.8 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-114)*

**675 IAC 19-4-115 Section 803.3.9; heat recovery for service water heating**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 115. Delete subsection 803.3.9 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-115)*

**675 IAC 19-4-116 Section 803.3.10; energy recovery ventilation systems**  
**Authority:** IC 12-13-2-2; IC 22-13-2-13  
**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 116. Delete subsection 803.3.10 in its entirety without substitution.** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-116)*

**675 IAC 19-4-117 Section 803.4; complex HVAC systems and equipment**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 117. Insert subsection 803.4 to read as follows: 803.4 Complex HVAC systems and equipment. This section applies to buildings served by HVAC equipment and systems not covered in Section 803.2. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-117)**

**675 IAC 19-4-118 Section 803.4.1; economizers**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 118. Insert subsection 803.4.1 to read as follows: 803.4.1 Economizers. Supply air economizers shall be provided on each cooling system according to Table 803.3.1(1). Economizers shall be capable of operating at 100 percent outside air, even if additional mechanical cooling is required to meet the cooling load of the building.**

**Exception: Systems utilizing water economizers that are capable of cooling supply air by direct or indirect evaporation or both and providing 100 percent of the expected system cooling load at outside air temperatures of 50°F (10°C) dry bulb/45°F (7°C) wet bulb and below.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-118)*

**675 IAC 19-4-119 Section 803.4.2; variable air volume (VAV) fan control**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 119. Insert subsection 803.4.2 to read as follows: 803.4.2 Variable air volume (VAV) fan control. Individual VAV fans with motors of 10 horsepower (7.5 kW) or greater shall be:**

- 1. Driven by a mechanical or electrical variable speed drive; or**
- 2. The fan motor shall have controls or devices that will result in fan motor demand of no more than 30 percent of their design wattage at 50 percent of design air flow when static pressure set point equals one-third of the total design static pressure, based on manufacturer's certified fan data.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-119)*

**675 IAC 19-4-120 Section 803.4.3; hydronic systems controls**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 120. Insert subsection 803.4.3 to read as follows: 803.4.3 Hydronic systems controls. The heating of fluids that have been previously mechanically cooled and the cooling of fluids that have been previously mechanically heated shall be limited in accordance with Sections 803.4.3.1 through 803.4.3.3. Hydronic heating systems comprised of multiple-packaged boilers and designed to deliver conditioned water or steam into a common distribution system shall include automatic controls capable of sequencing operation of the boilers. Hydronic heating systems comprised of a single boiler and greater than 500,000 Btu/h input design capacity shall include either a multistaged or modulating burner. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-120)**

**675 IAC 19-4-121 Section 803.4.3.1; three-pipe system**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 121. Insert subsection 803.4.3.1 to read as follows: 803.4.3.1 Three-pipe system. Hydronic systems that use a common return system for both hot water and chilled water are prohibited. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-121)**

**675 IAC 19-4-122 Section 803.4.3.2; two-pipe changeover system**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 122. Insert subsection 803.4.3.2 to read as follows: 803.4.3.2 Two-pipe changeover system. Systems that use a common distribution system to supply both heated and chilled water shall be: designed to allow a dead band between changeover from one mode to the other of at least 15°F (8.3°C) outside air temperatures; designed to and provided with controls that will allow operation in one mode for at least 4 hours before changing over to the other mode; and provided with controls that allow heating and cooling supply temperatures at the changeover point to be no more than 30°F (16.7°C) apart. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-122)**

**675 IAC 19-4-123 Section 803.4.3.3; hydronic (water loop) heat pump systems**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 123. Insert subsection 803.4.3.3 to read as follows: 803.4.3.3 Hydronic (water loop) heat pump systems. Hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection and heat addition shall have controls that are capable of providing a heat pump water supply temperature dead band of at least 20°F (11.1°C) between initiation of heat rejection and heat addition by the central devices. If a closed-circuit cooling tower is used, either an automatic valve shall be installed to bypass all but a minimal flow of water around the tower, or lower leakage positive closure dampers shall be provided. If an open-circuit tower is used directly in the heat pump loop, an automatic valve shall be installed to bypass all heat pump water flow around the tower. If an open-circuit cooling tower is used in conjunction with a separate heat exchanger to isolate the cooling tower from the heat pump loop, then heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop. Each hydronic heat pump on the hydronic system having a total pump system power exceeding 10 horsepower (hp) (7.5 kW) shall have a two-position valve.**

**Exception: Where a system loop temperature optimization controller is installed and can determine the most efficient operating temperature based on real time conditions of demand and capacity, dead bands of less than 20°F (11.1°C) shall be permitted.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-123)*

**675 IAC 19-4-124 Section 803.4.3.4; part load controls**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 124. Insert subsection 803.4.3.4 to read as follows: 803.4.3.4 Part load controls. Hydronic systems greater than or equal to 300,000 Btu/h (87,930 W) in design output capacity supplying heated or chilled water to comfort conditioning systems shall include controls that have the capability to:**

**1. Automatically reset the supply water temperatures using zone-return water temperature, building-return water temperature, or outside air temperature as an indicator of building heating or cooling demand. The temperature shall be capable of being reset by at least 25 percent of the design supply-to-return water temperature difference;**

**Exception: Where the supply temperature reset controls cannot be implemented without causing improper operation of heating, cooling, humidifying, or dehumidifying systems. or**

**2. Reduce system pump flow by at least 50 percent of design flow rate utilizing adjustable speed drive(s) on pump(s), or multiple-staged pumps where at least one-half of the total pump horsepower is capable of being automatically turned off or control valves designed to modulate or step down, and close, as a function of load, or other approved means.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-124)*

**675 IAC 19-4-125 Section 803.4.3.5; pump isolation**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 125. Insert subsection 803.4.3.5 to read as follows: 803.4.3.5 Pump isolation. Chilled water plants including more than one chiller shall have the capability to reduce flow automatically through the chiller plant when a chiller is shut down. Chillers piped in series for the purpose of increased temperature differential shall be considered as one chiller.**

**Boiler plants including more than one boiler shall have the capability to reduce flow automatically through the boiler plant when a boiler is shut down. (Fire Prevention and Building Safety Commission; 675 IAC 19-4-125)**

**675 IAC 19-4-126 Section 803.4.4; heat rejection equipment fan speed control**

**Authority: IC 12-13-2-2; IC 22-13-2-13**



**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 126. Insert subsection 803.4.4 to read as follows: 803.4.4 Heat rejection equipment fan speed control. Each fan powered by a motor of 7.5 hp (5.6 kW) or larger shall have the capability to operate that fan at two-thirds of full speed or less and shall have controls that automatically change the fan speed to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device.**

**Exception: Factory-installed heat rejection devices within HVAC equipment tested and rated in accordance with Tables 803.2.3(6) through 803.2.3(11).**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-126)*

**675 IAC 19-4-127 Section 803.4.5; requirements for complex mechanical systems serving multiple zones**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 127. Insert subsection 803.4.5 to read as follows: 803.4.5 Requirements for complex mechanical systems serving multiple zones. Sections 803.4.5.1 through 803.4.5.3 shall apply to complex mechanical systems serving multiple zones. Supply air systems serving multiple zones shall be VAV systems that, during periods of occupancy, are designed and capable of being controlled to reduce primary air supply to each zone to one of the following before reheating, recooling, or mixing takes place:**

- 1. Thirty percent of the maximum supply air to each zone.**
- 2. Three hundred cfm (142 L/s) or less where the maximum flow rate is less than 10 percent of the total fan system supply airflow rate.**
- 3. The minimum ventilation requirements of 675 IAC 18.**

**Exception: The following define when individual zones or when entire air distribution systems are exempted from the requirement for VAV control:**

- 1. Zones where special pressurization relationships or cross-contamination requirements are such that VAV systems are impractical.**
- 2. Zones or supply air systems where at least 75 percent of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered or site solar energy source.**
- 3. Zones where special humidity levels are required to satisfy process needs.**
- 4. Zones with a peak supply air quantity of 300 cfm (142 L/s) or less and where the flow rate is less than 10 percent of the total fan system supply airflow rate.**
- 5. Zones where the volume of air to be reheated, recooled, or mixed is no greater than the volume of outside air required to meet the minimum ventilation requirements of 675 IAC 18.**
- 6. Zones or supply air systems with thermostatic and humidistatic controls capable of operating in sequence the supply of heating and cooling energy to the zone(s) and that are capable of preventing reheating, recooling, mixing or simultaneous supply of air that has been previously cooled, either mechanically or through the use of economizer systems, and air that has been previously mechanically heated.**

*(Fire Prevention and Building Safety Commission; 675 IAC 19-4-127)*

**675 IAC 19-4-128 Section 803.4.5.1; single duct variable air volume (VAV) systems, terminal devices**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 128. Insert subsection 803.4.5.1 to read as follows: 803.4.5.1 Single duct variable air volume (VAV) systems, terminal devices. Single duct VAV systems shall use terminal devices capable of reducing the supply of primary supply air before reheating or recooling takes place. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-128)***

**675 IAC 19-4-129 Section 803.4.5.2; dual duct and mixing VAV systems, terminal devices**

**Authority: IC 12-13-2-2; IC 22-13-2-13**

**Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7**

**Sec. 129. Insert subsection 803.4.5.2 to read as follows: 803.4.5.2 Dual duct and mixing VAV systems, terminal devices. Systems that have one warm air duct and one cool air duct shall use terminal devices that are capable of reducing the flow from one duct to a minimum before mixing of air from the other duct takes place. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-129)***

**675 IAC 19-4-130 Section 803.4.5.3; single fan dual duct and mixing VAV systems, economizers**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 130.** Insert subsection 803.4.5.3 to read as follows: 803.4.5.3 Single fan dual duct and mixing VAV systems, economizers. Individual dual duct or mixing heating and cooling systems with a single fan and with total capacities greater than 90,000 Btu/h [(26 375 W) 7.5 tons] shall not be equipped with air economizers. *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-130)*

**675 IAC 19-4-131 Section 804; service water heating**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 131.** Amend the title of Section 804 to read as follows: **SERVICE WATER HEATING (Mandatory).** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-131)*

**675 IAC 19-4-132 Table 804.2; minimum performance of water heating equipment**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 132.** Delete Table 804.2 and substitute to read as follows:

**TABLE 804.2**

**MINIMUM PERFORMANCE OF WATER-HEATING EQUIPMENT**

EQUIPMENT TYPE	SIZE CATEGORY (input)	SUBCATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED <sup>a,b</sup>	TEST PROCEDURE
Water heaters, Electric	≤ 12 W	Resistance	0.93 - 0.00132V, EF	DOE 10 CFR Part 430
	> 12 W	Resistance	1.73V + 155 SL, Btu/h	ANSI Z21.10.3
	≤ 24 amps and ≤ 250 volts	Heat pump	0.93 - 0.00132V, EF	DOE 10 CFR Part 430
Storage water heaters, Gas	≤ 75,000 Btu/h	≥ 20 gal	0.62 - 0.0019V, EF	DOE 10 CFR Part 430
	> 75,000 Btu/h and ≤ 155,000 Btu/h	< 4,000 Btu/h/gal	80% E <sub>t</sub> (Q/800 + 110 √V) SL, Btu/h	ANSI Z21.10.3
	> 155,000 Btu/h	< 4,000 Btu/h/gal	80% E <sub>t</sub> (Q/800 + 110 √V) SL, Btu/h	
Instantaneous water heaters, Gas	> 50,000 Btu/h and < 200,000 Btu/h <sup>c</sup>	≥ 4,000 Btu/h/gal and < 2 gal	0.62 - 0.0019V, EF	DOE 10 CFR Part 430
	≥ 200,000 Btu/h	≥ 4,000 (Btu/h)/gal and < 10 gal	80% E <sub>t</sub>	ANSI Z21.10.3
	≥ 200,000 Btu/h	≥ 4,000 Btu/h/gal and ≥ 10 gal	80% E <sub>t</sub> (Q/800 + 110 √V) SL, Btu/h	
Storage water heaters, Oil	≤ 105,000 Btu/h	≥ 20 gal	0.59 - 0.0019V, EF	DOE 10 CFR Part 430
	> 105,000 Btu/h	< 4,000 Btu/h/gal	78% E <sub>t</sub> (Q/800 + 110 √V) SL, Btu/h	ANSI Z21.10.3
Instantaneous water heaters, Oil	≤ 210,000 Btu/h	≥ 4,000 Btu/h/gal and < 2 gal	0.59 - 0.0019V, EF	DOE 10 CFR Part 430

	> 210,000 Btu/h	$\geq 4,000 \text{ Btu/h/gal}$ and < 10 gal	80% $E_t$	ANSI Z21.10.3
	> 210,000 Btu/h	$\geq 4,000 \text{ Btu/h/gal}$ and $\geq 10 \text{ gal}$	78% $E_t$ ( $Q/800 + 110 \sqrt{V}$ ) SL, Btu/h	
Hot water supply boilers, Gas and Oil	$\geq 300,000 \text{ Btu/h}$ and < 12,500,000 Btu/h	$\geq 4,000 \text{ Btu/h/gal}$ and < 10 gal	80% $E_t$	ANSI Z21.10.3
Hot water supply boilers, Gas	$\geq 300,000 \text{ Btu/h}$ and < 12,500,000 Btu/h	$\geq 4,000 \text{ Btu/h/gal}$ and $\geq 10 \text{ gal}$	80% $E_t$ ( $Q/800 + 110 \sqrt{V}$ ) SL, Btu/h	
Hot water supply boilers, Oil	$\geq 300,000 \text{ Btu/h}$ and < 12,500,000 Btu/h	$\geq 4,000 \text{ Btu/h/gal}$ and $\geq 10 \text{ gal}$	78% $E_t$ ( $Q/800 + 110 \sqrt{V}$ ) SL, Btu/h	
Pool heaters, Gas and Oil	All	_____	78% $E_t$	ASHRAE 146
Heat Pump Pool Heaters	All	_____	4.0 COP	ARI 1160
Unfired storage tanks	All	_____	$\leq 6.5 \text{ Btu/h} \cdot \text{ft}^2$	(none)

For SI:  $^{\circ}\text{C} = [(^{\circ}\text{F}) - 32] / 1.8$  British thermal unit per hour = 0.2931 W, 1 gallon = 3.785 L, 1 British thermal unit per hour per gallon = 0.078 W/L.

a. Energy factor (EF) and thermal efficiency ( $E_t$ ) are minimum requirements. In the EF equation, V is the rated volume in gallons.

b. Standby loss (SL) is the maximum Btu/h based on a nominal 70°F temperature difference between stored water and ambient requirements. In the SL equation, Q is the nameplate input rate in Btu/h. In the SL equation for electric water heaters, V is the rated volume in gallons. In the SL equation for oil and gas water heaters and boilers, V is the rated volume in gallons.

c. Instantaneous water heaters with input rates below 200,000 Btu/h must comply with these requirements if the water heater is designed to heat water to temperatures 180°F or higher.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-132)

#### 675 IAC 19-4-133 Section 803.4.6; heat recovery for service water heating

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

Sec. 133. Insert subsection 803.4.6 to read as follows: 803.4.6 Heat recovery for service water heating. Condenser heat recovery shall be installed for heating or reheating of service hot water provided the facility operates 24 hours a day, the total installed heat capacity of water-cooled systems exceeds 6,000,000 Btu/hr of heat rejection, and the design service water heating load exceeds 1,000,000 Btu/h.

The required heat recovery system shall have the capacity to provide the smaller of:

1. Sixty percent of the peak heat rejection load at design conditions; or
2. The preheating required to raise the peak service hot water draw to 85°F (29°C).

Exceptions: 1. Facilities that employ condenser heat recovery for space heating or reheat purposes with a heat recovery design exceeding 30 percent of the peak water-cooled condenser load at design conditions.

2. Facilities that provide 60 percent of their service water heating from site solar or site recovered energy or from other sources.

3. This code is not intended to abridge safety, health, or environmental requirements contained in other applicable codes, ordinances, or standards.

(Fire Prevention and Building Safety Commission; 675 IAC 19-4-133)

#### 675 IAC 19-4-134 Section 805; electrical power and lighting systems

Authority: IC 12-13-2-2; IC 22-13-2-13

Affected: IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 134. Amend title of Section 805 to read as follows: ELECTRICAL POWER AND LIGHTING SYSTEMS (Mandatory).** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-134)*

**675 IAC 19-4-135 Section 805.1; general**

**Authority:** IC 12-13-2-2; IC 22-13-2-13

**Affected:** IC 22-12; IC 22-13; IC 22-15; IC 36-7

**Sec. 135. Amend title of subsection 805.1 to read as follows: General (Mandatory).** *(Fire Prevention and Building Safety Commission; 675 IAC 19-4-135)*

SECTION 2. 675 IAC 19-3 IS REPEALED.

### ***Notice of Public Hearing***

*Under IC 4-22-2-24, notice is hereby given that on May 16, 2006 at 10:00 a.m., at the Indiana Government Center-South, 402 West Washington Street, Conference Center Room 1, Indianapolis, Indiana; AND on July 6, 2006 at 10:00 a.m., at the Indiana Government Center-South, 402 West Washington Street, Conference Center Room B, Indianapolis, Indiana the Fire Prevention and Building Safety Commission will hold a public hearing on a proposed new rule to adopt by reference and amend the International Energy Conservation Code, 2004 Supplement Edition. All interested persons are invited to submit written comments to the Indiana Department of Homeland Security, Code Services Section, Attn.: Mara Snyder, Indiana Government Center-South, 302 West Washington Street, Room E243, Indianapolis, Indiana 46204.*

*This rule will not impose additional requirements or costs upon regulated entities under IC 4-22-2-24(d)(3).*

*Copies of these rules are now on file at the Indiana Government Center-South, 302 West Washington Street, Room W246 and Legislative Services Agency, One North Capitol, Suite 325, Indianapolis, Indiana and are open for public inspection.*

David Hannum  
Chairman  
Fire Prevention and Building Safety Commission