November 18, 2005 ~~May11, 2005~~

PART 3280--MANUFACTURED HOME CONSTRUCTION AND SAFETY STANDARDS

1. The authority citation for part 3280 continues to read as follows:

2.

Authority: 42 U.S.C. 3535(d), 5403, and 5424.

2. In §3280.4, revise paragraph (a) to read as follows:

§ 3280.4 Incorporation by reference.

(a) The specifications, standards, and codes of the following organizations are incorporated by reference. Reference standards have the same force and effect as the~~is~~ standards in this part. Where two or more referenced standards are equivalent in application, the manufacturer ~~will have~~has the option to incorporate into the manufactured home design and construction the referenced standard of its~~their~~ choosing. ~~Except w~~When reference standards and the~~is~~ standards in this part are inconsistent, however, the requirements of this part~~standard~~ must prevail to the extent of the inconsistency.

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3. In § 3280.105, revise paragraphs (a)(2)(iv) and (b)(2) to read as follows:

§ 3280.105 Exit facilities; exterior doors.

~~* * * * *~~

(a) * * *

(2) * * *

(iv) One of the required exit doors must be accessible from the doorway of each bedroom without traveling more than 35 feet. The travel distance to the exit door must be measured on the floor or other walking surface along the center~~-~~-line of the natural and unobstructed path of travel starting at the center of the bedroom door, curving around any corners or permanent obstructions with a one foot clearance ~~there~~ from, and ending at, the center of the exit door.

* * * * *

(b) * * *

(2) All exterior swinging doors must provide a minimum 28-~~in.~~inch wide x 74-~~in.~~inch high clear opening. Door seals are permitted to reduce the opening, either vertically or horizontally, a maximum of one inch. All exterior sliding glass doors ~~shall~~ must provide a minimum 28-~~in.~~inch wide x 72-~~in.~~inch high clear opening.

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4. Revise § 3280.111 to read as follows:

§ 3280.111 Toilet Compartments.

Each toilet compartment must have a minimum width of 30 in., with a minimum clear space of 21 ~~in.~~ inches in front of each toilet. A toilet located adjacent to a wall must have the center~~-~~-line of the toilet located a minimum of 15 ~~in.~~ inches from the wall. A toilet located adjacent to a tub must have the center~~-~~-line of the toilet located a minimum of 12 ~~in.~~ inches from the outside edge of the tub.

5. ~~Revise~~ Amend §3280.113~~(b)~~ by revising paragraph (b) and ~~by~~ adding new paragraphs (c) and (d) to read as follows:

§ 3280.113 Glass and glazed openings.

* * * * *

(b) Hazardous locations requiring ~~the use of~~ safety glazing ~~materials~~. Except as provided in paragraph (d) of this section, ~~T~~the following locations and areas require the use of safety glazing ~~materials~~ conforming to the requirements of paragraph (c) of this section:

(1) Glazing in all entrance or exit doors;

(2) Glazing in fixed and sliding panels of sliding glass doors;

(3) Glazing in storm type doors;

(4) Glazing in unframed side-hinged swinging doors;

(5) Glazing in doors and fixed panels less than 60 inches above the room floor level that enclose bathtubs, showers, hydromassage tubs, hot tubs, whirlpools, saunas, and steamrooms;

(6) Glazing within 12 inches horizontally, as measured from the edge of the door in the closed position, and 60 inches vertically as measured from the room floor level, adjacent to and in the ~~–~~same plane of a door;~~. The 12 inch dimension is measured from the edge of the door in the closed position. The 60 inch dimension is measured from the room floor level~~;

(7) Glazing within 36 inches of an interior room walking surface ~~that~~ when the glazing meets all of the ~~-~~following:

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(i) Individual glazed panels ~~that~~ exceed 9 square feet in area in an exposed surface area;

(ii) The bottom edge of the exposed glazing is less than 19 inches above the room floor level~~.~~; and

(iii) The top edge of the exposed glazing is greater than 36 inches above the room floor level.

(8) Glazing in rails and guardrails; and~~,~~

(9) Glazing in unbacked mirrored wardrobe doors (i.e., mirrors that are not secured to a ~~backing~~ backing that is capable of being the door itself).

(c) Safety glazing material is considered to be any glazing material capable of meeting~~passing~~ the requirements of CPSC 16 CFR 1201, or the Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings, ANSI Z97.1-1984.

(d) Glazing in ~~meeting~~ the following locations ~~criteria are~~ is not required to meet the ~~above~~ requirements in~~of~~ paragraph~~s~~ (b) ~~and (c)~~ of this section:

(1) Openings in doors through which a 3~~-~~-inch sphere is unable to pass;

(2) Leaded and decorative glazed panels;

(3) Glazing in jalousie type doors;

(4) Glazing as described in paragraph(b)(6) of this section when an intervening wall or other permanent barrier exists between the door and the glazing~~.~~;

(5) Glazing as described in paragraph (b)(7) of this sectionwhen a protective bar or member is installed horizontally between 34 inches and 38 inches above the room floor level, as long as t~~. T~~he bar or member ~~must be~~is a minimum of 1-1/2 inches in height and capable of resisting a horizontal load of 50 pounds per lineal foot~~.~~; and

(6) Mirrors mounted on a flush door surface or solid wall surface.

6. In §3280.204, revise paragraph (c) to read as follows:

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§ 3280.204 Kitchen cabinet protection

* * * * *

(c) Alternative compliance. When all exposed surfaces along the bottoms and sides of combustible kitchen cabinets are protected as described in paragraph (a) of this section, the metal hood, the 5/16-inch thick gypsum board or equivalent material, and the 3/8-inch airspace required by paragraph (a) of this section can be omitted, as long as a microwave oven is installed between the cabinet and the range and the microwave oven:

(1) Provides protection equivalent to the metal range hood required by paragraph (a) of this section; and

(2) Is certified to Microwave Cooking Appliances, UL 923 89--1998.

* * * * *

~~6~~7. Redesignate §§ 3280.207 through 3280.209 as §§ 3280.208 through 3280.210, respectively, and add a new § 3280.207 to read as follows:

§ 3280.207 Requirements for Thermal Insulating Materials.

(a) General. Except for foam plastic materials and as provided in this section, exposed and concealed thermal insulating materials, including any facings, must be tested in accordance with NFPA 255-96, Standard Method of Test of Surface Burning Characteristics of Building Materials, and must have a flame spread index of 25 or less and a smoke developed index of 450 or less. The flame spread and smoke developed limitations do not apply to:

(1) Coverings and facings of insulation batts or blankets installed in concealed spaces when the facings are in substantial contact with the unexposed surface of wall, floor, or ceiling finish; or

(2) Cellulose loose-fill insulation that complies with paragraph (b) of this section.

(b) Loose-fill insulation. (1) Cellulose loose-fill insulation that is not spray applied or self-supporting must comply with, and each package must be labeled in accordance with, the Consumer Product Safety Commission requirements in 16 CFR parts 1209 and 1404.

(2) Other loose-fill insulation that cannot be mounted in the NFPA 255-96 test apparatus without a screen or other artificial support must be tested in accordance with CAN/ULC-S102.2-M88 and must have a flame spread index of 25 or less and a smoke developed index of 450.

(c) Attic locations. Exposed insulation installed on the floor or ceiling forming the lower boundary of the attic must be tested in accordance with NFPA 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, and must have a critical radiant flux of not less than 0.12 watt/cm^2.

~~(a) Insulating materials other than Foam Plastic.~~

~~(1) General. Exposed and concealed thermal insulating materials, other than foam plastic, shall have a flame spread index of 25 or less, and a smoke developed index of 450 or less when tested in accordance with NFPA 255-96, Standard Method of Test of Surface Burning Characteristics of Building Materials. Tested materials shall include any facings. Materials and methods complying with this section must be accepted.~~

~~(i) The flame spread and smoke developed limitations do not apply to coverings and facings of insulation batts or blankets installed in concealed spaces where the facings are in substantial contact with the unexposed surface of wall, floor, or ceiling finish.~~

~~(ii) Cellulose loose-fill insulation, which is not spray applied or self supporting and which complies with paragraph (a)(2) of this section, is not be required to have a flame spread index of 25 or less.~~

~~(2) Loose-fill insulation.~~

~~(i) Loose-fill insulation, other than cellulose loose-fill insulation, which cannot be mounted in the NFPA 255-96 test apparatus without a screen or other artificial support, must have a flame spread index of 25 or less and a smoke development index of 450 or less when tested in accordance with CAN/ULC-S102.2–M88. Cellulose loose fill must comply with paragraph (a)(2)(ii) of this section.~~

~~(ii) Cellulose loose-fill insulation must comply with, and each package must be labeled, in accordance with CPSC 16 CFR, Parts 1209 and 1404.~~

~~(3) Attic locations. Exposed insulation installed in attics on the floor or ceiling forming the lower boundary of the attic must have a critical radiant flux of not less than 0.12 watt/cm 2 when tested in accordance with NFPA 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.~~

~~7~~8. Revise §3280.301 to read as follows:

§ 3280.301 Scope. This subpart covers the minimum requirements for materials, products, equipment, and workmanship needed to assure that the manufactured home will provide the following:

(a) Structural strength and rigidity~~,~~;

(b) Protection against corrosion, decay, insects, rodents, and other similar destructive forces~~,~~;

(c) Protection against wind hazards ~~of windstorm,~~;

(d) Resistance to the elements~~,~~; and

(e) Durability and economy of maintenance.

~~8~~9. In § 3280.304(b)(1), in the list of Wood and Wood Products, substitute later editions of the reference standards for Design and Fabrication of Glued Plywood Lumber Beams, Design and Fabrication of Plywood Sandwich Panels, Design and Fabrication of Plywood Stress Skin Panels, and Performance Standard for Wood-Based Structural Panels, and add reference standards for Engineered Wood Construction Guide and for Medium Density Fiberboard, to read as follows:~~add the following reference standard for Medium Density Fiberboard to the list of Wood and Wood Products references in alphabetical order:~~

§ 3280.304 Materials

* * * * *

(b)(1) * * *

Wood and Wood Products

* * *

Design and Fabrication of Glued Plywood-Lumber Beams, Suppl. 2—APA-S 812R, 1998.

Design and Fabrication of Plywood Sandwich Panels—APA-U814 H, 1993.

Design and Fabrication of Plywood Stressed Skin Panels, Suppl. 3—APA-U 813L, 1996.

Performance Standard for Wood-Based Structural Use Panels—PS 2-04, 2005.

* * *

Engineered Wood Construction Guide—APA, 2001.

Medium Density Fiberboard (MDF) – ANSI A208.2-1999.

* * * * *

10. In § 3280.305, revise paragraphs (c)(1)(i), (c)(2)(iv), and (c)(3)(ii) to read as follows:

§ 3280.305 Structural design requirements.

* * * * *

(c) * * *

(1) * * *

(i) *Standard wind loads (Zone I).* When a manufactured home is not designed to resist the wind loads for high wind areas (Zone II or Zone III) specified in paragraph (c)(1)(ii) of this section, the manufactured home and each of its wind resisting parts and portions ~~shall~~ must be designed for horizontal wind loads of not less than 15 psf and a net uplift roof load of not less than 9 psf. The net uplift roof load~~ing shall~~ must not be reduced by the dead load of the roof structure for the purposes of engineering design or structural load testing.

* * * * *

(2) * * *

(iv) *Consideration of Local Requirements.* For areas where wind mapping data or records or the requirements of the State or ~~L~~local ~~A~~authority ~~Having Jurisdiction (LAHJ)~~ indicate~~s~~ wind speeds in excess of those identified in this section~~standard~~, the Department may establish, through rulemaking, more stringent requirements for manufactured homes to be installed in such areas.

* * * * *

(3) * * *

(ii) *Consideration of Local Requirements.* For exposures in areas (mountainous or other) where recognized snow records, ~~or~~ wind records, or the requirements of the State or local authority~~LAHJ~~ indicate significant differences from the loads stated in this paragraph (c)(3)~~above~~, the Department may establish, through rulemaking, more stringent requirements for manufactured homes to be installed in such areas. For snow loads, such requirements ~~shall~~ must be based on a roof snow load of 0.6 of the ground snow load for areas exposed to wind and a roof snow load of 0.8 of the ground snow load for sheltered areas.

* * * * *

11. In §3280.306, revise paragraph (b)(2)(v) by substituting "ASTM D3953, Standard Specification for Strapping, Flat Steel and Seals, 1997" for the reference to "ASTM Standard Specification D3953-91, Standard Specification for Strapping, Flat Steel, and Seals", and revise paragraph (g)(2) to read as follows:

§ 3280.306 Windstorm protection

* * * * *

(g) * * *

(2) Type 1, Finish B, Grade 1 steel strapping, 1-1/4 inches wide and 0.035 inches in thickness, certified by a registered professional engineer or architect as conforming with ASTM D3953, Standard Specification for Strapping, Flat Steel and Seals, 1997.

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12~~10~~. In §-3280.308, revise paragraph (a)(2), and add paragraphs (a)(3) and (a)(4) to read as follows:

§ 3280.308 Formaldehyde emission controls for certain wood products.

(a) * * *

(2) Particleboard used as flooring materials ~~(manufactured home decking – MHD)~~ must not emit formaldehyde in excess of 0.20 parts per million (ppm)~~,~~ ~~as specified in ANSI A208.1-1999,Table B and~~ as measured by the air chamber test specified in §3280.406.

(3) Particleboard materials used in applications other than flooring must not emit formaldehyde in excess of 0.30 ppm~~,~~ ~~as specified in ANSI A208.1-1999, Table A and~~ as measured by the air chamber test specified in §3280.406.

(4) Medium Density Fiberboard (MDF) must not emit formaldehyde in excess of 0.3 ppm, as ~~specified in ANSI A208.2-1994~~ measured by the air chamber test specified in §3280.406.

* * * * *

13~~11~~. In § 3280.403, revise paragraph (a), redesignate paragraph (b) as (b)(1), add paragraph (b)(2), revise paragraph (c), and add paragraph (e)(3) to read as follows:

§ 3280.403 Requirements for windows, sliding glass doors, and skylights ~~used in manufactured homes~~.

(a) Scope. This section ~~sets~~ establishes the requirements for prime windows and sliding glass doors, except windows used in an entry door~~s~~ are components of the door ~~and thus~~ are excluded from these requirements.

(b)(1) * * *

(2) All skylights ~~shall~~ must comply with AAMA /WDMA 1600/I.S 7-~~99~~00,~~.~~ Voluntary Specifications for Skylights. Skylights must ~~be required to~~ withstand the roof loads for the applicable Roof Load Zone specified in §3280.305(c)(3), and the following wind loads:~~(i) or (ii)~~

(i) For Wind Zone I, the wind loads ~~and the wind pressures for the applicable Basic Wind Zone as~~ specified in §3280.305(c)(1)(i); and

(ii) For Wind Zones II and III, the wind loads specified ~~for Wind Zone I or~~ for exterior roof coverings, sheathing, and fastenings ~~as specified~~ in §3280.305(c)(1)(ii) ~~for Wind Zones II and III~~.

(c) Installation. All primary windows, sliding glass doors, and skylights must be installed in a manner that allows proper operation and provides protection against the elements, as required by~~. (see~~ §3280.307.~~)~~

* * * * *

(e) * * *

(3) All skylights ~~to be~~ installed in manufactured homes must be certified as complying with AAMA /WDMA 1600/I.S 7-~~99~~00, Voluntary Specifications for Skylights. This certification must be based on applicable loads specified in paragraph (b) of this section.~~.~~

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14~~12~~. In § 3280.404, revise paragraph (c)(2) and add paragraph (c)(3) to read as follows:

§ 3280.404 Standard for egress windows and devices for use in manufactured homes.

* * * * *

(c) * * *

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(2) ~~(2)~~ An operational check of each installed egress window or device must be made at the manufactured home factory. All egress windows and devices must be capable of being opened to the minimum required dimensions by normal operation of the window without binding or requiring the use of tools. ~~Windows that require the removal of the sash to meet egress size requirements are prohibited.~~ Any window or device failing this check must be repaired or replaced. A repaired window must conform to its certification. Any repaired or replaced window or device must pass the operational check.

(3) Windows that require the removal of the sash to meet egress size requirements are prohibited.

* * * * *

15~~13~~. Revise §3280.503 to read as follows:

§ 3280.503 Materials.

Materials used for insulation and the thermal and pressure envelopes must be of proven effectiveness and adequate durability to ensure that required design conditions concerning thermal transmission and energy conservation are attained.

16~~14~~. In §3280.504, redesignate existing paragraph (c) as paragraph (d) and add new paragraph (c) to read as follows:

§ 3280.504 Condensation control and installation of vapor retarders.

* * * * *

(c) Liquid Applied Vapor Retarders. Each l~~L~~iquid applied vapor retarder~~s~~ must be tested by a nationally recognized testing agency for use on the specific substrate to which it is applied.

The test report must include the perm rating~~(s)~~ (as measured by ASTM E 96-95, Standard Test Methods for Water Vapor Transmission of Materials) and associated application rate~~(s)~~ for each~~the~~ specific substrate~~(s)~~.

* * * * *

17~~5~~. In §3280.505, revise paragraph (a) to read as follows:

§ 3280.505 Air infiltration.

(a) Envelope Air Infiltration. The opaque envelope ~~shall~~ must be designed and constructed to limit air infiltration to the living area of the home. Any design, material, method, or combination thereof that accomplishes this goal ~~shall be permitted to~~ may be used. The goals of the infiltration control criteria are~~is~~ to reduce heat loss/heat gain due to infiltration, limit moisture transfer that causes condensation, and reduce draft that causes comfort problems.

* * * * *

18~~6~~. In §3280.506, revise paragraph (c) to read as follows:

§ 3280.506 Heat loss/heat gain.

* * * * *

(c) Manufactured homes designed for Uo ~~v~~Value Zone 3 ~~shall~~ must be factory-equipped with storm windows or insulating glass. Interior mounted storm window frames must be sealed.

* * * * *

19~~7~~. In §3280.508, revise paragraph (c) to read as follows:

§ 3280.508 Heat loss, heat gain and cooling load calculations.

* * * * *

(c) Areas where the insulation does not fully cover a surface or is compressed ~~shall~~ must be accounted for in the U-calculation. (see § 3280.506). The effect of framing on the U-value ~~shall~~ must be included in the Uo calculation. Other low-R-value heat-flow paths ("thermal shorts") ~~shall~~ must be explicitly accounted for in the calculation of the transmission heat loss coefficient if, in the aggregate, all types of low-R-value paths amount to more than 1 percent of the total exterior surface area , or 40 sq ft, whichever is less. Areas will be considered low-R-value heat-flow paths if both of the following apply:

(1) They separate conditioned and unconditioned space~~.~~; and

(2) They are not insulated to a level that is at least one-half the nominal insulation level of the surrounding building component.

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20~~18~~. In §3280.509, revise paragraph (c) and replace the graph with a Table to read as follows:

§ 3280.509 Criteria in absence of specific data.

* * * * *

(c) Insulation compression. Insulation compressed to less than nominal thickness and loose~~-~~fill insulation in sloping cavities, must have its nominal R-values reduced in ~~that~~ compressed areas ~~which is compressed~~ in accordance with the following table:

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Table

Effect of Insulation Compression and Restriction on R-value

% of Original Thickness	Non-uniform (a) Restriction		Uniform (b) Compression	% of Original Thickness	Non-uniform Restriction		Uniform Compression
	Batt	Blown	Batt		Batt	Blown	Batt
0%	20%	15%	0%				
1%	26%	21%	1%	51%	81%	73%	62%
2%	32%	25%	2%	52%	81%	73%	63%
3%	36%	28%	4%	53%	82%	74%	64%
4%	38%	30%	5%	54%	82%	75%	65%
5%	41%	32%	7%	55%	83%	75%	65%
6%	43%	33%	8%	56%	83%	76%	66%
7%	45%	35%	10%	57%	84%	76%	67%
8%	46%	36%	11%	58%	84%	77%	68%
9%	48%	38%	13%	59%	84%	78%	69%
10%	49%	39%	14%	60%	85%	78%	70%
11%	51%	40%	15%	61%	85%	79%	71%
12%	52%	42%	17%	62%	86%	79%	72%
13%	53%	43%	18%	63%	86%	80%	73%
14%	54%	44%	20%	64%	87%	81%	74%
15%	55%	45%	21%	65%	87%	81%	74%
16%	57%	46%	22%	66%	88%	82%	75%
17%	58%	47%	24%	67%	88%	82%	76%
18%	59%	48%	25%	68%	88%	83%	77%
19%	59%	49%	26%	69%	89%	84%	78%
20%	60%	50%	28%	70%	89%	84%	78%
21%	61%	51%	29%	71%	90%	85%	79%
22%	62%	52%	30%	72%	90%	85%	80%
23%	63%	52%	31%	73%	90%	86%	81%
24%	64%	53%	33%	74%	91%	86%	82%
25%	65%	54%	34%	75%	91%	87%	82%
26%	65%	55%	35%	76%	92%	87%	83%
27%	66%	56%	36%	77%	92%	88%	84%
28%	67%	57%	37%	78%	92%	89%	85%
29%	68%	57%	39%	79%	93%	89%	85%
30%	68%	58%	40%	80%	93%	90%	86%
31%	69%	59%	41%	81%	93%	90%	87%
32%	70%	60%	42%	82%	94%	91%	88%
33%	70%	60%	43%	83%	94%	91%	88%
34%	71%	61%	44%	84%	95%	92%	89%
35%	72%	62%	45%	85%	95%	92%	90%
36%	72%	63%	47%	86%	95%	93%	91%
37%	73%	63%	48%	87%	96%	93%	91%
38%	74%	64%	49%	88%	96%	94%	92%
39%	74%	65%	50%	89%	96%	94%	93%
40%	75%	65%	51%	90%	97%	95%	93%
41%	75%	66%	52%	91%	97%	95%	94%
42%	76%	67%	53%	92%	97%	96%	95%
43%	76%	68%	54%	93%	98%	96%	95%
44%	77%	68%	55%	94%	98%	97%	96%
45%	78%	69%	56%	95%	98%	97%	97%
46%	78%	70%	57%	96%	99%	98%	97%
47%	79%	70%	58%	97%	99%	98%	98%
48%	79%	71%	59%	98%	99%	99%	98%
49%	80%	71%	60%	99%	100%	99%	99%
50%	80%	72%	61%	100%	100%	100%	100%

To use this table first compute the restricted insulation thickness as a fraction of the uncompressed (full) insulation thickness, then look up the R-value remaining from the appropriate column (Non-uniform Restriction Batt, Non-uniform Restriction Blown, or Uniform Compression Batt). Example: Assume a section of loose-fill ceiling insulation went from R-25 insulation at a height of 10 inches to a minimum height of 2 inches at the edge of the ceiling. The ratio of minimum to full thickness is 0.20 (2 divided by 10). Look up 0.20 (20%) and read across to column 3 (Non-uniform Restriction, Blown) and read 50%. Therefore, the R-value of the loose-fill insulation over the restricted area would be R-12.5 (50% of 25).

(a) Non-uniform restriction is that which occurs between non-parallel planes, such as in the ceiling near the eaves.

(b) Uniform compression is compression between parallel planes such as that which occurs in a wall.

* * * * *

2119. In §3280.510, revise paragraphs (b) and ~~Heating Certificate and remove paragraph~~ (c) to read as follows:

§ 3280.510 Heat loss certificate.

* * * * *

(b) Outdoor temperature. The heating certificate must indicate the lowest outdoor temperature at which the installed heating equipment will maintain a 70°F ~~(21°C)~~ temperature inside the home.

(c) Text of certificate.

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HEATING CERTIFICATE

Home Manufacturer_____

Plant Location_____

Home Model_____

(Include Uo Value Zone Map)

This manufactured home has been thermally insulated to conform with the requirements of the Federal Manufactured Home Construction and Safety Standards for all locations within Uo Value Zone ____.

Heating Equipment Manufacturer_____

Heating Equipment Model_____

The above heating equipment has the capacity to maintain an average 70F temperature in this home at outdoor temperatures of ~~[see paragraph(b) of this section]~~ ___ F.

~~(c) [Removed]~~

22~~0~~. In §3280.511, revise paragraphs (a)(1) and (a)(2) to read as follows:

§ 3280.511 Comfort cooling certificate and information.

(a) * * *

(1) ~~(1)~~ Alternative 1. If a central air conditioning system is provided by the home manufacturer, the heat gain calculation necessary to properly size the air conditioning equipment must be made in accordance with the procedures outlined in Chapter 27 of the 1997 ASHRAE Handbook of Fundamentals, with an assumed location and orientation. The following must be supplied in the Comfort Cooling Certificate:

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Alternative 1
Comfort Cooling Certificate Example

Manufactured Home Manufacturer: _____
Plant Location: _____
Manufactured Home Model: _____
Air Conditioner Manufacturer: _____

Certified capacity _____ BTU~~tu~~/H~~h~~r in accordance with the appropriate Air Conditioning and Refrigeration Institute Standards.

The central air-conditioning system provided with this home has been sized assuming an orientation of the front (hitch end) of the home facing _____. On this basis, the system is designed to maintain an indoor temperature of 75ºF ~~(24ºC)~~ when the outdoor temperatures are _____ ºF~~(ºC)~~ dry bulb and _____ ºF~~(ºC)~~ wet bulb.

The temperature to which this home can be cooled will change depending upon the amount of exposure of the windows of this home to the sun's radiant heat. Therefore, the home's heat gains will vary depending~~ent~~ upon its orientation to the sun and any permanent shading provided. Information concerning the calculation of the cooling loads at various locations, window exposures, and shadings is~~are~~ provided in Chapter 27 of the 1997 ASHRAE *Handbook of Fundamentals*.

(2) Alternative 2. For each home suitable for a central air conditioning~~cooling~~ system but in which such a system is not installed, the manufacturer must provide the following

statement: ``The~~is~~ air distribution system of this home is suitable for the installation of a central air conditioning system." The Comfort Cooling Certificate required by paragraph (a) of this section must include the information provided in the following:

~~Alternative 2~~

Comfort Cooling Certificate

Manufactured Home Manufacturer_____
Plant Location_____
Manufactured Home Model_____

The~~is~~ air distribution system of this home is suitable for the installation of central air conditioning.

The supply air ~~distribution~~ duct system installed in this home is sized for a m~~M~~anufactured h~~H~~ome c~~C~~entral a~~A~~ir c~~C~~onditioning s~~S~~ystem of up to _____ B~~.~~T~~.~~U~~.~~/Hr. This size assumes the air conditioner uses~~is based on~~ air circulators ~~of such air conditioners~~ rated at 0.3 inch water column static pressure or greater for the cooling air delivered to the manufactured home supply air duct system.

* * * * *

2~~1~~3. In §3280.602, ~~replace~~ delete the definition for *Anti-siphon trap vent device* and ~~with~~ add a new definition for *Mechanical trap vent device* in alphabetical order as follows:

§ **3280.602 Definitions.**

* * * * *

Mechanical trap vent device means a device ~~which~~ that automatically opens to admit air to a fixture drain above the connection of the trap arm so as to prevent siphonage, and closes tightly when the pressure within the drainage system is equal to or greater than atmospheric pressure so as to prevent the escape of gases from the drainage system into the manufactured home.

* * * * *

242. In §3280.603, revise paragraphs (a)(2), (b)(4)(ii) and (b)(4)(iii) to read as follows:

§ 3280.603 General requirements.

(a) * * *

(2) Conservation. Each wWater closets shall must not use more than 1.6 gallons (6 L) of water per flush.

* * * * *

(b) * * *

(4) * * *

(ii) A statement in the installation instructions required by § 3280.306(b) stating that if the heat tape or pipe heating cable is used, it must be listed for use with manufactured homes.

(iii) A receptacle outlet complying with section§ 3280.806(d)(10).

* * * * *

253. In §3280.604, add the following reference standards alphabetically to the Plastic Pipe and Fittings table following paragraph (b)(2) to read as follows:

* * * * *

Standard Specification for Crosslinked Polyethylene (PEX) Tubing—ASTM F876-1993

Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems--ASTM F877-1995

264. In §3280.605, redesignate paragraphs (a)(1) through (7), (a)(7)(i), and (a)(7)(ii) as paragraphs (b) through (h), (h)(1), and (h)(2), respectively, and revise paragraph ~~(a)(7)(i)~~(h)(1) as redesignated to read as follows:

§ 3280.605 Joints and connections.

~~(a)~~ * * * * *

(~~7~~h) * * *

(1~~i~~) Approved or listed hubless pipe and fittings must be permitted to be joined with listed couplings or adapters, per the manufacturer's recommendations.

* * * * *

275. In §3280.606, revise paragraph (a)(2) to read as follows:

§ 3280.606 Traps and Cleanouts.

(a) * * *

(2) Combination Fixtures. For the purposes of drainage and ventilation requirements, a ~~A~~ two- or three-~~-~~compartment sink, up to three single sinks, or up to three lavatories may be connected to one "P" trap and considered as a single fixture, as long as the sinks and lavatories are in the same room, have ~~with~~ waste outlets not more than 30 inches apart, ~~in the same room,~~ and have flood level rims at the same level. ~~are permitted to be connected to one "P" trap and considered as a single fixture for the purposes of drainage and ventilation requirements.~~ The "P" trap must be installed at the center fixture when three such fixtures are installed.

* * * * *

2~~6~~. In §3280.607, revise paragraphs (a)(3), (b)(2)(v), (b)(4)(i), (b)(5)(ii), and (c)(6) and add new paragraph (b)(3)(v) to read as follows:

§ 3280.607 Plumbing fixtures.

* * * * *

(a) * * *

(3) Fixture Connections. Fixture tailpieces and continuous wastes in exposed or accessible locations must be of not less than No. 20 Brown and Sharpe gauge seamless drawn-brass tubing or other approved pipe or tubing materials. Inaccessible fixture connections must be constructed according to the requirements for drainage piping. The diameter of e~~E~~ach fixture tailpiece, continuous waste, or waste and overflow must be~~-~~ not less than:

(i) 1-1/2 inches, for sinks of two or more compartments, dishwashers, clothes washing machines, laundry tubs, bathtubs and showers; and

(ii) N~~n~~ot less than 1-1/4 inches for lavatories or single compartment sinks having a 2-inch maximum drain opening.

* * * * *

(b) * * *

(2) * * *

(v) Floor Connection. Water closets ~~shall~~ must be securely bolted to an approved flange or other approved fitting that is secured to the floor by means of corrosion-resistant screws. The bolts must be of solid brass or other corrosion-resistant material and ~~shall~~ must be not less than 1/4 in. in diameter. A watertight seal ~~shall~~ must be made between the water closet and flange or other approved fitting by use of a gasket, sealing compound, or listed connector device.

* * * * *

~~(b) * * *~~

(3) * * *

(v) Shower, bathtub, and tub-shower combination valves must be balanced pressure, thermostatic, or combination mixing valves that conform to the requirements of ASSE 1016 – 1996, Performance Requirements for Individual Thermostatic Pressure Balancing and Combination Control for Bathing Facilities. Such valves must be equipped with handle position stops that are adjustable in accordance with the valve manufacturer's instructions to a maximum setting of 120°F.

~~(b) * * *~~

(4) * * *

(i) A dishwashing machine must discharge its waste through a fixed air gap installed above the machine; through a high loop as specified by the dishwashing machine manufacturer; or into an open standpipe receptor with a height greater than the washing compartment of the machine. When a standpipe is used, it must be at least 18 inches, but not more than 30 inches, above the trap weir. The drain connections from the air gap or high loop are permitted to connect to an individual trap; to a directional fitting installed in the sink tailpiece; or to an opening provided on the inlet side of a food waste disposal unit.

(ii~~b~~) * * *

(5) * * *

(ii) Standpipes must be either 1-1/2 inch~~es~~ diameter minimum nominal iron pipe size, 1-1/2 inch~~es~~ diameter nominal brass tubing of not less than No. 20 Brown and Sharp gauge, or 1-1/2 inch~~es~~ diameter approved plastic materials. Receptors must discharge into a vented trap or

must be connected to a laundry tub appliance by means of an approved or listed directional fitting. Each standpipe must extend not less than 18 inches or more than 42 inches above its trap and must terminate in an accessible location no lower than the top of the clothes washing machine. A removable, tight fitting cap or plug must be installed on the standpipe when a clothes washing machine is not provided.

(c) * * *

(6) Hydromassage bathtub.

(i) Access panel. A door or panel of sufficient size must be installed to provide access to the pump for repair ~~and/~~or replacement.

(ii) Piping drainage. The circulation pump must be accessibly located above the crown weir of the trap. The pump drain line must be properly sloped to drain the volute after fixture use.

(iii) Piping. Hydromassage bathtub circulation piping must be installed to be self-draining.

(iv) Electrical.. * * *

* * * * *

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2~~9~~7. In §3280.609, revise paragraphs (b)(7) and (b)(8) to read as follows:

§ 3280.609 Water distribution systems.

* * * * *

(b) * * *

(7) Hose Bibbs. When provided, all exterior hose bibbs and laundry sink hose connections must be protected by a listed non-removable backflow prevention device. This

~~provision shall~~ requirement is not ~~be~~ applicable to hose connections provided for automatic washing machines with built-in backflow prevention or water heater drain valves.

(8) Flushometer Tanks. Flushometer tanks must be equipped with an approved air gap or vacuum breaker assembly that is located above the flood level rim above the fixture.

* * * * *

30~~28~~. In §3280.610, revise paragraphs (b)(1) and (e)~~(1)~~ to read as follows:

§3280.610 Drainage systems.

* * * * *

(b) * * *

(1) Pipe. Drainage piping must be standard weight galvanized steel, brass, copper tube DWV, listed Scheduled 40 ABS plastic, listed Scheduled 40 PVC plastic, cast iron, or other listed or approved materials.

* * * * *

(e) Size of drainage piping. ~~* * *~~

~~(1)~~ Fixture drains must be sized as follows:

(1~~i~~) Fixture drains serving a single lavatory ~~shall~~ must be 1-1/4 inch minimum in diameter.

(2~~ii~~) Fixture drains serving ~~other fixtures or multiple~~two or three fixtures ~~up to 3~~ must be 1-1/2 inch minimum in diameter.

~~(iii) Fixture drains must not be smaller than the sizes specified in Section 3280.607(b).~~

(3~~iv~~) Fixture drains serving ~~A 2-inch minimum diameter piping is required for~~ four~~4~~ or more fixtures that are individually vented must be 2 inch minimum in diameter.

(~~4v~~) Fixture drains for water closets must be ~~A~~ 3-inch minimum in diameter. ~~piping is~~ required for water closets.

* * * * *

31~~29~~. In §3280.611, redesignate paragraph (f)(2) as (f)(3), add a new paragraph (f)(2), and revise paragraphs (b)(1), (d), and (f)(1)~~, and (f)(2)~~ to read as follows:

§ 3280.611 Vents and venting.

* * * * *

(b) * * *

(1) Pipe. Vent piping must be standard weight galvanized steel, brass, copper tube DWV, listed Scheduled 40 ABS plastic, listed Scheduled 40 PVC plastic, cast iron, or other listed or approved materials.

* * * * *

(d) Mechanical Vents. Where mechanical vents are used as a secondary vent system for plumbing fixtures that are protected by traps, the mechanical vents must comply with paragraphs ~~§3280.611~~(d)(1) or ~~3280.611~~(d)(2) of this section.

(1) Spring operated mechanical (anti-siphon) vents must comply with the following:

(i) No more than two fixtures individually protected by the spring operated mechanical vent ~~shall~~ may be drained by a common 1-1/2 ~~in.~~ inch diameter drain.

(ii) The ~~Minimum~~ drain size for three or more fixtures individually protected by ~~the~~ a spring operated mechanical vent must ~~-~~be at least 2 ~~in.~~inches in diameter.

(iii) Spring operated mechanical vents are restricted to venting fixtures with 1-1/2 ~~in.~~ inch traps.

(iv) A spring operated mechanical vent must be installed in a location that allows a free flow of air and is ~~to be~~ accessible for inspection, maintenance, and replacement. The sealing function ~~shall~~ must be at least 6 ~~in~~inches~~.~~ above the top of the trap arm.

(v) Materials for the spring operated mechanical vents must be as follows:

(A) Cap and housing ~~shall~~ must be listed acrylonitrile-butadiene-styrene, DWV grade~~;~~.

(B) Stem must be DWV grade nylon or acetal~~;~~.

(C) Spring must be stainless steel wire, Type 302~~;~~ and

(D) Sealing disc must be either:

(1) Neoprene, conforming to CISPI-HSN-85, Specification for Neoprene Rubber Gaskets for HUB and Spigot Cast Iron Soil Pipe and Fittings, and to ASTM C 564-97, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings~~,~~; or

(2) Other material, conforming to ASTM C 920-2002, Standard Specification for Elastomeric Joint Sealants, and to ASTM D 4635-2001, Standard Specification for Polyethylene Films Made from Low-Density Polyethylene for General Use and Packaging Applications.

(2) Gravity operated mechanical (air admittance valves) vents must comply with the following:

(i) Where installed to vent any fixture, the drain system must have a minimum 1-1/2 ~~in~~inch ~~.~~ diameter vent that~~which~~ terminates outside the manufactured home.

(ii) Where gravity operated mechanical vent devices terminate in the attic cavity, the following requirements must be met~~will apply~~:

(A) The attic cavity ~~is~~ must be accessible. ~~as described in §3280.611(d)(1)(iv).~~

(B) The sealing device ~~is~~ must be installed a minimum of ~~6~~six ~~in.~~ inches above ~~building~~ the insulation materials.

(C) The attic ~~is~~ must be vented in accordance with §3280.504(c)(1)(i).

(3) Mechanical vents must be installed in accordance with the vent manufacturer's ~~installation~~ instructions.

* * * * *

(f) Vent terminal.~~.~~ Vents must terminate through the roof~~,~~ or wall, or to a mechanical vent device in accordance with ~~Section 3282.611~~paragraph (d) of this section.

(1) Roof extension. Each vent pipe must extend through its flashing and terminate vertically. Vents that extend through the roof must extend undiminished in size, not less than 2 inches above the roof. Vent openings ~~are to~~ must be at least 3 feet away from any motor-driven air intake that opens into any habitable area.

(2) Wall ~~vent~~ extensions. Extensions through exterior walls ~~shall~~ must terminate downward, ~~and must~~ have a screen to prevent entrance of birds and rodents, and ~~must~~ be located as follows:

(i) Extensions must not be located beneath a door, window, or other opening;~~.~~

(ii) Extensions must be a minimum of 10 feet above the finished floor;~~.~~

~~(iii)Extensions must not be located beneath a window or other opening.~~

~~(iv)~~(iii) Extensions must be located a minimum of 2 feet above any building opening that is within 10 feet horizontally of any extension;~~.~~ and

~~(v)~~(iv) Extensions must not terminate under an overhang with soffit vents.

(3) * * *

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3~~0~~. In §3280.702, revise the definitions of *Class 0 air ducts*, *Class 1 air ducts*, *Heating appliance*, and *Water Heater*; ~~and remove~~ delete the definitions of *Class 2 air ducts* and *Energy Efficiency Ratio (EER)*; and add definitions of *Combination Space Heating and Water Heating Appliance*, *Direct-Vent System Appliance*, and *Direct-Vent System* in alphabetical order, as follows:

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§ 3280.702 Definitions.

* * * * *

Class 0 air ducts and air connectors means air ducts and air connectors having a fire hazard classification of zero when tested in accordance with UL 181, Standard for Safety Factory-Made Air Ducts and Air Connectors.

Class 1 air ducts and air connectors means air ducts and air connectors having a flame spread rating of not over 25 without evidence of continued progressive combustion and a smoke developed rating of not over 50 when tested in accordance with UL 181, Standard for Safety Factory-Made Air Ducts and Air Connectors.

Class 2 air ducts [~~removed~~deleted]

* * * * *

Combination Space Heating and Water Heating Appliance means a listed unit that is designed to provide space heating and water heating from a single primary energy source.

* * * * *

Direct-Vent System means a system or method of construction where all air for combustion is derived directly from the outside atmosphere and all flue gases are discharged to the outside atmosphere.

Direct-Vent System Appliance means an appliance that is installed with a direct vent system.

Energy Efficiency Ratio (EER) [removeddeleted]

* * * * *

Heating appliance means an appliance for comfort heating, domestic water heating, or a combination of comfort heating and domestic water heating.

* * * * *

Water heater means an appliance for heating water for domestic purposes.

31. In §3280.702, add the following definitions in alphabetical order to read as follows:

* * * * *

Combination Space Heating and Water Heating Appliance means a listed unit that is designed to provide space heating and water heating from a single primary energy source.

Direct-Vent System Appliance means an appliance that is installed with a direct vent system.

Direct-Vent System means a system or method of construction where all air for combustion is derived directly from the outside atmosphere and all flue gases are discharged to the outside atmosphere.

* * * * *

32. In §3280.703, under the heading for "Appliances" add athe reference standard for *Decorative Gas Appliances for Installation in Solid Fuel Burning Appliances* after the standard for *Gas-Fired Central Furnaces*to the Appliance section , and under the heading for

"Miscellaneous" revise the *Standard for the Installation of Oil-Burning Equipment* to read as follows:

§ 3280.703 Minimum standards.

* * *

APPLIANCES

* * * * *

Decorative Gas Appliances for Installation in Solid Fuel Burning Appliances – RADCO Standard DS-010-1991.

* * * * *

MISCELLANEOUS

* * *

Gas Appliance Thermostats—ANSI Z21.23, 1993.

* * *

Standard for the Installation of Oil-burning Equipment, NFPA 31, 2001 Edition.

* * * * *

3~~4~~3. In §3280.704, ~~remove~~ delete paragraphs (a), (b), and (c), and reserve the section to read as follows:

§ 3280.704 Fuel Supply Systems. [Reserved]

~~(a) [Removed]~~

~~(b) [Removed]~~

~~(c) [Removed]~~

* * * * *

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354. In §3280.705, ~~revise~~add paragraph (b)(5), ~~add a new~~revise the t~~T~~able in paragraph (d), and revise paragraph (h) to read as follows:

§ 3280.705 Gas piping systems.

* * * * *

(b) * * *

(5) Corrugated stainless steel tubing (CSST) systems ~~shall~~ must be listed and installed in accordance with ANSI/IAS LC-1-1997, Gas Piping Systems Using Corrugated Stainless Steel Tubing, and the requirements of this section.

* * * * *

(d) * * *

Table

Maximum Capacity of Different Sizes of Pipe and Tubing in Thousands of Btuh of Natural Gas for Gas Pressures of 0.5 psig or Less, and a Maximum pressure Drop of 1/2-in. Water Column

Corrugated Stainless Steel Tubing-Length*

EHD**	ID	10	20	30	40	50	60	70	80	90	100
13	3/8 in.	31	21	17	14	13	12	11	10	10	9
15	3/8 in.	42	30	24	20	18	16	15	14	13	12
18	1/2 in.	79	56	45	39	36	33	30	28	27	25
19	1/2 in.	91	64	52	45	40	36	35	32	31	29
23	3/4 in.	155	111	92	80	72	65	60	58	55	52
25	3/4 in.	184	132	108	93	84	77	71	66	62	60
30	1 in.	317	222	180	156	138	126	116	108	103	97
31	1 in.	368	258	209	180	161	147	135	127	120	113
37	1 1/4 in.	598	426	350	304	273	250	231	217	205	195

*Includes losses for four 90 degree bends and two end fittings. Tubing runs with larger numbers of bend and/or fittings shall be increased by an equivalent length of tubing according to the following equation L=1.3n, where L is anal length (ft) of tubing and n is the number of additional fittings and/or bends.

**EHD — Equivalent Hydraulic Diameter — A measure of the hydraulic efficiency between different tubing sizes.

* * * * *

(h) Concealed tubing. (1) Copper tubing must not be run inside walls, floors, partitions, or roofs. Corrugated stainless steel tubing (CSST) ~~is permitted to~~ may be run inside walls, floors, partitions, and roofs under the following conditions:

(i) The CSST~~Where it~~ is protected from accidental puncture by a steel strike barrier not less than 0.058 inch thick, or the barrier's equivalent, ~~that is~~ installed between the tubing and the finished wall and ~~that~~ extend~~ings~~ 4 inches beyond concealed penetrations of plates, firestops, and wall studs, ~~etc., or as~~ specified by the tubing manufacturer's ~~installation~~ instructions; and~~,~~

(ii) The CSST~~Where the tubing~~ is installed in single runs and is not rigidly secured.

(2) Where tubing passes through exterior walls, floors, partitions, or similar construction, the~~such~~ tubing must be protected by the use of weather-~~-~~resistant grommets that ~~must fit~~ snugly fit both the tubing and the hole through which the tubing passes, or protected as specified in the tubing manufacturer's instructions.

(3) Concealed joints. Piping or tubing joints must not be located in any wall, floor, partition, or similar concealed construction space.

* * * * *

3~~6~~5. In §3280.706, revise paragraph (j) to read as follows:

§ 3280.706 Oil piping systems.

* * * * *

(j) Testing Tag. A tag ~~shall~~ must be affixed to ~~the~~ each oil-fired appliance~~(s)~~ stating: "Before setting the system in operation, tank installations and piping must be checked for oil leaks with fuel oil of the same grade that will be burned in the appliance. No other material ~~is to~~

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may be used for testing fuel oil tanks and piping. Tanks ~~shall~~ must be filled to maximum capacity for the final check for oil leakage."

3~~7~~6. In §3280.707, revise paragraphs (a)(2) and (d) to read as follows:

§ 3280.707 Heat producing appliances.

~~* * * * *~~

(a) * * *

(2) Each g~~G~~as and oil burning comfort heating appliance~~s shall~~ must have an Annual Fuel Utilization Efficiency of not less than that~~as~~ specified in the National Appliance Energy Conservation Act of 1987.

* * * * *

~~37. In §3280.707, revise paragraph (d) to read as follows:~~

~~**§3280.707 Heat producing appliances.**~~

~~* * * * *~~

(d) Performance efficiency. Each~~All~~ automatic storage water heater~~s shall~~ must comply with the efficiency requirements of the National Appliance Energy Conservation Act of 1987.

38. Revise §3280.711 to read as follows:

§ 3280.711 Instructions.

Operating instructions ~~shall~~ must be provided with each appliance. The~~All~~ operating and installation instructions for each appliance must ~~shall~~ be provided with the homeowner's manual.

39. In §3280.714, revise paragraphs (a)(1)(i) and (ii) to read as follows:

§ 3280.714 Appliances, cooling.

(a) * * *

(1) * * *

(i) Electric motor-driven unitary air-cooled air conditioners and heat pumps in the cooling mode with rated capacity less than 65,000 BTU/Hr~~tuh~~ (19045 watts), when rated at ARI standard rating conditions in ARI Standard 210/240-89, Unitary Air Conditioning and Air Source Heat Pump Equipment, must have seasonal energy efficiency (SEER) values not less than as specified in the National Appliance Energy Conservation Act of 1987.

(ii) Heat pumps must be certified to comply with all ~~the~~ requirements of the ARI Standard 210/240-89, Unitary Air Conditioning and Air-Source Heat Pump Equipment. Electric motor-driven vapor compression heat pumps with supplemental electrical resistance heat ~~shall~~ must be sized to provide by compression at least 60 percent of the calculated annual heating requirements for the manufactured home being served. A control must be provided and set to prevent operation of supplemental electrical resistance heat at outdoor temperatures above 40°F (4°C), except for defrost conditions. Electric motor-driven vapor compression heat pumps with supplemental electric resistance heat conforming to ARI Standard 210/240-89, Unitary Air Conditioning and Air-Source Heat Pump Equipment, ~~shall~~ must have Heating Season Performance Factor (HSPF) efficiencies not less than as specified in the National Appliance Energy Conservation Act of 1987.

* * * * *