## HOUSE BILL 2758

State of Washington 60th Legislature 2008 Regular Session

By Representatives Morris, Morrell, and Hudgins

Read first time 01/16/08. Referred to Committee on Technology, Energy & Communications.

1 AN ACT Relating to adding products to the energy efficiency code; 2 and amending RCW 19.260.040.

3 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

4 **Sec. 1.** RCW 19.260.040 and 2006 c 194 s 3 are each amended to read 5 as follows:

6 The legislature establishes the following minimum efficiency 7 standards for the types of new products set forth in RCW 19.260.030.

8 (1)(a) Automatic commercial ice cube machines must have daily 9 energy use and daily water use no greater than the applicable values in 10 the following table:

11				Maximum	Maximum condenser
12			Harvest rate	energy use	water use
13	Equipment type	Type of cooling	(lbs. ice/24 hrs.)	(kWh/100 lbs.)	(gallons/100 lbs. ice)
14	Ice-making head	water	<500	7.800055H	200022H
15			>=500<1436	5.580011H	200022H
16			>=1436	4.0	200022H

1	Ice-making head	air	450	10.260086H	Not applicable
2			>=450	6.890011H	Not applicable
3	Remote condensing but	air	<1000	8.850038	Not applicable
4	not remote compressor		>=1000	5.10	Not applicable
5	Remote condensing and	air	<934	8.850038H	Not applicable
6	remote compressor		>=934	5.3	Not applicable
7	Self-contained models	water	<200	11.400190Н	1910315H
8			>=200	7.60	1910315H
9	Self-contained models	air	<175	18.00469H	Not applicable
10			>=175	9.80	Not applicable

Where H= harvest rate in pounds per twenty-four hours which must be reported within 5% of the tested value.

12 "Maximum water use" applies only to water used for the condenser.

(b) For purposes of this section, automatic commercial ice cube machines shall be tested in accordance with ARI 810-2003 test method as published by the air-conditioning and refrigeration institute. Icemaking heads include all automatic commercial ice cube machines that are not split system ice makers or self-contained models as defined in ARI 810-2003.

(2) Commercial clothes washers must have a minimum modified energy factor of 1.26. For the purposes of this section, capacity and modified energy factor are defined and measured in accordance with the current federal test method for clothes washers as found at 10 C.F.R. Sec. 430.23.

(3) Commercial prerinse spray valves must have a flow rate equal to
or less than 1.6 gallons per minute when measured in accordance with
the American society for testing and materials' "Standard Test Method
for Prerinse Spray Valves," ASTM F2324-03.

28 (4)(a) Commercial refrigerators and freezers must meet the 29 applicable requirements listed in the following table:

30	Equipment Type	Doors	Maximum Daily Energy Consumption (kWh)
31	Reach-in cabinets, pass-through cabinets,	Solid	0.10V+ 2.04
32	and roll-in or roll-through cabinets that are	Transparent	0.12V+ 3.34
	refrigerators		
33	Reach-in cabinets, pass-through cabinets,	Transparent	.126V+ 3.51
34	and roll-in or roll-through cabinets that are		
35	"pulldown" refrigerators		

1	Reach-in cabinets, pass-through cabinets,	Solid	0.40V+ 1.38
2	and roll-in or roll-through cabinets that are	Transparent	0.75V+ 4.10
	freezers		
3	Reach-in cabinets that are refrigerator-	Solid	0.27AV - 0.71
4	freezers		
5	with an AV of 5.19 or higher		

6 kWh= kilowatt hours

7  $V = \text{total volume (ft}^3)$ 

8

AV= adjusted volume=  $[1.63 \text{ x freezer volume } (\text{ft}^3)]$ + refrigerator volume  $(\text{ft}^3)$ 

(b) For purposes of this section, "pulldown" designates products 9 10 designed to take a fully stocked refrigerator with beverages at 90 11 degrees F and cool those beverages to a stable temperature of 38 12 degrees F within 12 hours or less. Daily energy consumption shall be 13 measured in accordance with the American national standards 14 institute/American society of heating, refrigerating and airconditioning engineers test method 117-2002, except that the back-15 loading doors of pass-through and roll-through refrigerators and 16 17 freezers must remain closed throughout the test, and except that the 18 controls of all appliances must be adjusted to obtain the following 19 product temperatures.

20	Product or compartment type	Integrated average product temperature in degrees Fahrenheit		
21	Refrigerator	38 <u>+</u> 2		
22	Freezer	0 <u>+</u> 2		
23	(5) Metal halide lamp fix	tures designed to be operated with lamps		
24	rated greater than or equal to	o 150 watts but less than or equal to 500		
25	watts shall not contain a prob	pe-start metal halide lamp ballast.		

26 (6)(a) Single-voltage external AC to DC power supplies shall meet 27 the requirements in the following table:

28	Nameplate output	Minimum Efficiency in Active Mode
29	< 1 Watt	0.49 * Nameplate Output
30	> or= 1 Watt and < or= 49 Watts	0.09 * Ln (Nameplate Output)+ 0.49
31	> 49 Watts	0.84
32		Maximum Energy Consumption in No-Load Mode
33	< 10 Watts	0.5 Watts

2 Where Ln (Nameplate Output) - Natural Logarithm of the nameplate output expressed in Watts

3 (b) For the purposes of this section, efficiency of single-voltage 4 external AC to DC power supplies shall be measured in accordance with 5 the United States environmental protection agency's "Test Method for 6 Calculating the Energy Efficiency of Single-Voltage External AC to DC 7 and AC to AC Power Supplies," by Ecos Consulting and Power Electronics 8 Application Center, dated August 11, 2004.

9 (7)(a) <u>The lamp electrical power input of state-regulated</u> 10 incandescent reflector lamps ((shall meet the minimum average lamp 11 efficacy requirements for federally regulated incandescent reflector 12 lamps contained in 42 U.S.C. Sec. 6295(i)(l)(A).)) <u>manufactured on or</u> 13 after the effective dates listed in the following table, shall be no 14 greater than the applicable requirements shown in the following table:

15	Frost or Clear	Maximum Power Use (watts)	
16	Lumens (L)	January 1, 2009	January 1, 2009
17	<u>L &lt; 340</u>	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 21
18	$\underline{340 \le L < 562}$	(0.0500 * Lumens) + 21	<u>38</u>
19	$562 \le L < 610$	(0.0500 * Lumens) + 21	(0.2400 * Lumens) - 97
20	$\underline{610 \le L < 760}$	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 19
21	$\underline{760 \le L < 950}$	(0.0500 * Lumens) + 21	<u>57</u>
22	$950 \le L < 1013$	(0.0500 * Lumens) + 21	(0.2000 * Lumens) - 133
23	$1013 \le L < 1040$	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 19
24	$1040 \le L < 1300$	(0.0500 * Lumens) + 21	<u>71</u>
25	$1300 \le L < 1359$	(0.0500 * Lumens) + 21	(0.2700 * Lumens) - 280
26	$1359 \le L < 1520$	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 19
27	$1520 \le L < 1850$	(0.0500 * Lumens) + 21	<u>95</u>
28	$1850 \le L < 1900$	(0.0500 * Lumens) + 21	(0.4200 * Lumens) - 682
29	$\underline{L} \ge 1900$	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 21
30			
31	Soft White	Maximum Power Use (watts)	
32	Lumens (L)	January 1, 2009	January 1, 2009
33	<u>L &lt; 310</u>	(0.0500 * Lumens) + 22.5	(0.0500 * Lumens) + 22.5
34	$310 \le L < 514$	(0.0500 * Lumens) + 22.5	<u>38</u>
35	$514 \le L \le 562$	(0.0500 * Lumens) + 22.5	(0.2200 * Lumens) - 75

2 $730 \le L < 909$ $(0.0500 * Lumens) + 22.5$ $57$ 3 $909 \le L < 963$ $(0.0500 * Lumens) + 22.5$ $(0.2200 * Lumens) - 143$ 4 $963 \le L < 1010$ $(0.0500 * Lumens) + 22.5$ $(0.0500 * Lumens) + 20.5$ 5 $1010 \le L < 1250$ $(0.0500 * Lumens) + 22.5$ $71$ 6 $1250 \le L < 1310$ $(0.0500 * Lumens) + 22.5$ $(0.2500 * Lumens) - 241.5$ 7 $1310 \le L < 1490$ $(0.0500 * Lumens) + 22.5$ $(0.0500 * Lumens) + 20.5$	
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7 $1310 \le L < 1490$ (0.0500 * Lumens) + 22.5 (0.0500 * Lumens) + 20.5	
8 $\underline{1490 \le L < 1800}$ $\underline{(0.0500 * Lumens) + 22.5}$ 95	
9 $1800 \le L < 1850$ (0.0500 * Lumens) + 22.5 (0.4000 * Lumens) - 625	
10 <u><math>L \ge 1850</math></u> (0.0500 * Lumens) + 22.5 (0.0500 * Lumens) + 22.5	
11 (b) The average lamp efficacy of state-regulated incar	<u>idescent</u>
12 reflector lamps manufactured on or after January 1, 2009, shall	<u>be not</u>
13 less than the applicable requirements listed in the following t	able:
	T)
14 Rated Lamp wattage Minimum Average Lamp Efficacy (LPw)   15 10.5	)
15 <u>40-50</u> <u>10.5</u>	
16   51-66   11.0	
17 <u>67-85</u> <u>12.5</u>	
18 <u>86-115</u> <u>14.0</u>	
19 <u>116-155</u> <u>14.5</u>	
20 <u>156-205</u> <u>15.0</u>	
21 (c) The following types of incandescent lamps are exempt from	om these
22 requirements:	
23 (i) Lamps rated at fifty watts or less of the following type	es: BR
24 30, ER 30, BR 40, and ER 40;	
25 (ii) Lamps rated at sixty-five watts of the following typ	es: BR
26 30, BR 40, and ER 40; and	
27 (iii) R 20 lamps of forty-five watts or less.	
28 (8) Unit heaters must be equipped with intermittent	gnition
29 devices and must have either power venting or an automatic flue	damper.
30 (9) Wine chillers designed and sold for use by an individu	al must
31 not exceed the applicable requirements listed in the following	table:

1	Equipment Type	Maximum Annual Appliance Energy
2		Consumption (kWh)
3	Wine chillers with manual defrost	13.7V + 267
4	Wine chillers with automatic defrost	17.4V + 344
5		
6	<u>V = volume in ft<sup>3</sup></u> .	
7	(10) Freezers that are designed a	and sold for use by an individual
8	consumer that exceed 30 ft <sup>3</sup> but o	do not exceed 39 ft <sup>3</sup> , and are
9	manufactured on or after January 1, 2	009, shall be no greater than the
10	applicable requirements listed in the	following table:
11	Appliance	Maximum Annual Energy Consumption (kWh)
12	Upright Freezers with manual defrost	<u>7.55AV + 258.3</u>
13	Upright Freezers with automatic defrost	<u>12.43AV + 326.1</u>
14	Chest Freezers	9.88AV + 143.7
15		
16	$\underline{AV} = adjusted total volume, expressed in ft3, which is 1.73 x free$	ezer volume (ft <sup>3</sup> ).
17	(11) The internal illumination	of the following appliances,
18	manufactured on or after January 1,	2009, shall be only by (1) T-8
19	fluorescent lamps with electronic ba	llasts, or (2) a lighting system
20	that has no fewer lumens per watt	than a system using only T-8
21	fluorescent lamps with electronic bal	lasts:
22	<u>(a) Remote reach-in cabinets</u>	with transparent doors, remote
23	pass-through cabinets with transpare	ent doors, and remote roll-in or
24	roll-through cabinets with transparen	t doors;
25	(b) Cabinets without doors; and	
26	(c) Wine chillers that are not co	nsumer products.
27	(12)(a) Walk-in refrigerators and	walk-in freezers manufactured on
28	or after the effective dates shown	in the following table, with the
29	applicable motor types shown in	the following table, shall be
30	manufactured with the required compone	ents shown in the following table:

Motor Type

Effective Date

Required Components

1	All	January 1, 2009	Automatic door closers that firmly
2			close all reach-in doors
3	All	January 1, 2009	Automatic door closers on all doors no
4			wider than four feet or higher than
5			seven feet, that firmly close walk-in
6			doors that have been closed to within
7			one inch of full closure
8	All	January 1, 2009	Envelope insulation > R-28 for
9			<u>Refrigerators</u>
10	<u>All</u>	January 1, 2009	Envelope insulation > R-36 for
11			Freezers
12	Condenser Fan Motors < 1 HP	January 1, 2009	(i) Electronically commutated motors;
13			(ii) Permanent split capacitor-type
14			motors;
15			(iii) Polyphase motors > 1/2 HP; or
16			(iv) Motors of equivalent efficiency as
17			determined by the department
18	Single-phase Evaporator Fan Motors	January 1, 2009	(i) Electronically commutated motors;
19	< 1 HP and < 460 volts		or
20			(ii) Permanent split capacitor-type
21			motors
22	Single-phase Evaporator Fan Motors	January 1, 2011	Electronically commutated motors
23	$\leq$ 1 HP and $\leq$ 460 volts		
24	(b) In addition to the	e requirements	in (a) of this subsection,
25	walk-in refrigerators and w	walk-in freeze:	rs with transparent reach-in
26	doors that are manufactured	<u>on or after Ja</u>	nuary 1, 2009, shall meet the
27	following requirements:		
28	<u>(i) Transparent reach-i</u>	n doors shall	be of triple-pane glass with
29	either heat-reflective treat	ted glass or ga	as fill;
30	(ii) If the appliance	has an antiswe	eat heater without antisweat
31	heat controls, then the app	liance shall ha	ave a total door rail, glass,
32	and frame heater power draw	of no more th	an 40 watts (freezers) or 17
33	watts (refrigerators) per fo	oot of door fra	ame width; and
34	(iii) If the appliance h	has an antiswea	at heater with antisweat heat
35	controls, and the total doo	<u>r rail, g</u> lass,	and frame heater power draw
36	is more than 40 watts (free	zers) or 17 wa	tts (refrigerators) per foot
37	of door frame width, then:	The antiswea	t heat controls shall reduce

1	the energy use of the antiswe	eat heater in an amo	<u>unt corresponding to</u>
2	<u>the relative humidity in t</u>	<u>the air outside th</u>	<u>e door or to the</u>
3	condensation on the inner glas	ss pane.	
4	(13)(a) Refrigerated canne	ed and bottled bever	<u>age vending machines</u>
5	<u>manufactured on or after Janu</u>	<u>ary 1, 2009, shall b</u>	<u>e equipped with hard</u>
б	wired controls or software cap	able of automatically	y placing the machine
7	into each of the following ]	<u>low power mode state</u>	es and automatically
8	returning the machine to it	ts normal operating	conditions at the
9	conclusion of the low power mo	ode:	
10	<u>(i) Lighting low power sta</u>	te, which means the	<u>lights are off for an</u>
11	extended period;		
12	<u>(ii) Refrigeration low</u>	power state, which	means the average
13	<u>beverage temperature is allow</u>	ved to rise above 40	• F for an extended
14	period of time; and		
15	<u>(iii) Whole machine low po</u>	wer state, which mear	ns the lights are off
16	and the refrigeration operates	<u>s in its low power st</u>	<u>ate.</u>
17	(b) The low power mode-	related controls or	<u>software</u> shall be
18	<u>capable of on-site adjustmen</u>	its by the vending	<u>operator or machine</u>
19	owner.		
20	<u>(14) The daily energy c</u>	<u>onsumption for refr</u>	igerated canned and
21	bottled beverage vending mac	hines, and wine ch	illers that are not
22	<u>consumer products, manufactur</u>	<u>ed on or after the e</u>	ffective dates shown
23	<u>shall be no greater than the</u>	<u>e applicable require</u>	ments listed in the
24	following table:		
25	Maximum Da	ily Energy Consumption (kWh)	
26	Appliance	January 1, 2009	January 1, 2010
27			
28	Refrigerated canned and bottled 0.5	<u>5 (8.66 + (0.009 x C))</u>	<u>0.55 (8.66 + (0.009 x C))</u>
29	beverage vending machines when		
30	tested at 90° F ambient temperature		
31	except multipackage units		
32			
33	Refrigerated multipackage canned and 0.5	5 (8.66 + (0.009 x C))	<u>0.55 (8.66 + (0.009 x C))</u>
34	bottled beverage vending machines		
35	when tested at 75° F ambient		
36	temperature		

<u>< 65,000</u>

<u>8.3</u>

1								
2	<u>V = total volume (ft<sup>3</sup>)</u>							
3	<u>AV = Adjusted Volume = <math>[1.63 \text{ x freezer volume } (\text{ft}^3)]</math> + refrigerator volume <math>(\text{ft}^3)</math></u>							
4	<u>C = Rated capacity (num</u>	ber of 12 ounce c	<u>cans)</u>					
5	<u>(15) The</u>	standby	energy	consumptio	on of	bottle-	type	water
б	dispensers, and	<u>l point-of</u>	-use wate	er dispense	rs, disp	pensing b	oth ho	<u>t and</u>
7	<u>cold water, mar</u>	ufactured	on or a	Eter Januar	y 1, 200	)9, shall	not e	xceed
8	<u>1.2 kWh/day.</u>							
9	<u>(16)</u> Centr	al air co	nditione	rs shall n	neet the	e follow:	ing mi	nimum
10	<u>energy efficier</u>	<u>icy standa</u>	rds:					
11	<u>(a)</u> Ground	water-sour	<u>ce heat</u>	pumps, and	d ground	d-source	heat	pumps
12	manufactured or	<u>ı or after</u>	January	<u>, 1, 2009,</u>	<u>shall n</u>	ot be le	<u>ss thai</u>	<u>n the</u>
13	<u>applicable requ</u>	irements	<u>listed in</u>	<u>n the follo</u>	wing tak	ole:		
14	Appliance		Ratin	ng Condition		Minimum St	<u>andard</u>	
15								
16	Groundwater-source hea	<u>t pumps</u>	<u>59° F enterin</u>	g water temperatur	<u>e</u>	<u>16.2 EE</u>	<u>.R</u>	
17	(cooling)							
18	Groundwater-source hea	<u>t pumps</u>	50° F enterin	g water temperatur	<u>e</u>	<u>3.6 CO</u>	<u>P</u>	
19	(heating)							
20	Ground-source heat pun	<u>ıps (cooling)</u>	77° F enterin	ig brine temperature	<u>e</u>	<u>13.4 EE</u>	<u>R</u>	
21	Ground-source heat pum	ps (heating)	<u>32° F enterin</u>	ig brine temperature	<u>e</u>	<u>3.1 CO</u>	<u>P</u>	
22	<u>(b) Air-cc</u>	oled, wat	er-coole	d, glycol-	-cooled,	and ev	aporat	ively
23	<u>cooled compute</u>	<u>r room ai</u>	<u>r condit</u>	ioners man	ufactur	<u>ed on or</u>	after	<u>the</u>
24	<u>effective</u> date	es shown,	shall	<u>be not</u>	<u>less th</u>	<u>an the</u>	appli	<u>cable</u>
25	<u>requirements li</u>	<u>sted in t</u>	<u>he follo</u>	<u>wing two ta</u>	bles:			
26			<u>Minimum E</u>	ER (Btu/watt-hour)	<u>)</u>			
27	<u>Appliance</u> <u>C</u>	ooling 1	Effective	Effective	Effectiv	<u>ve</u>	<u>Effective</u>	
28	<u>C</u>	apacity Janu	uary 1, 2009	January 1, 2010	January 1,	<u>2011</u> Jan	uary 1, 201	2
29	0	<u> 3tu/hr)</u>						

<u>11.0</u>

<u>9.3</u>

<u>10.7</u>

1	Air-cooled	$\geq$ 65,000 and	<u>7.7</u>	<u>8.3</u>	<u>10.4</u>	<u>10.4</u>
2	computer room	<u>≤135,000</u>				
3	air conditioners					
4		<u>≥135,000 -</u>		<u>7.9</u>	<u>10.2</u>	<u>10.2</u>
5		<u>and &lt;</u>				
6		240,000				
7						
8			<u>Minimum E</u>	ER (Btu/watt-hour)		
9	Appliance	Cooling	Effective	Effective	Effective	Effective
10		Capacity	January 1, 2009	January 1, 2010	January 1, 2011	January 1, 2012
11		(Btu/hr)				
12	Water-cooled,	<u>&lt; 65,000</u>	<u>8.1</u>	<u>8.3</u>	<u>11.1</u>	<u>11.1</u>
13	glycol-cooled					
14	and					
15	evaporatively	<u>≥ 65,000 and</u>	<u>8.4</u>	<u>9.5</u>	<u>10.5</u>	<u>10.5</u>
16	cooled computer	< 135,000				
17	room air					
18	conditioners					
19		<u>≥135,000 -</u>		<u>8.6</u>	<u>8.6</u>	<u>10.0</u>
20		<u>and &lt;</u>				
21		240,000				
22	<u>Air-coo</u>	<u>led unitar</u>	ry air cond:	itioners man	nufactured o	<u>on or after the</u>
23	effective	dates sho	own, shall	be not l	less than	the applicable
24	<u>requirement</u>	<u>s listed i</u>	<u>n the follo</u>	wing table:		
25	Applianc	e	Cooling Capacity	Minimum	Standards	
26			• • •	Effective Janua	ary 1, 2009 Effe	ctive January 1, 2010
27	Air-cooled unitary	$\underline{air} \geq 24$	0,000 and < 760,000	<u>10.0 I</u>	EER	<u>10.5 EER</u>
28	conditioners					
29	<u>(17)(a)</u>	The effic	ciency of bo	oilers shall	<u>l be no les</u>	s than, and the
30	standby los	ss shall b	<u>pe no great</u>	er than, t	<u>he applicab</u>	<u>le requirements</u>

31 <u>listed in the following table:</u>

1			Standards		
2	Appliance	Output (Btu/hr)	Minimum AFUE %	<u>Maximum</u>	Maximum Standby
3				<u>Combustion</u>	Loss (watts)
4				Efficiency %*	
5	Gas steam boilers	<u>&lt; 300,000</u>	<u>75</u>	Ξ	Ξ
6	with 3-phase				
7	electrical supply				
8	All other boilers	<u>&lt; 300,000</u>	<u>80</u>	=	=
9	with 3-phase				
10	electrical supply				
11	Natural gas,	<u>≥ 300,000</u>		<u>80</u>	<u>147</u>
12	nonpackaged boilers				
13	LPG nonpackaged	<u>≥ 300,000</u>	=	<u>80</u>	<u>352</u>
14	<u>boilers</u>				
15	Oil, nonpackaged	<u>≥ 300,000</u>		<u>83</u>	=
16	boilers				
17	* At both maximum and	1 minimum rated capac	ity, as provided and allowe	ed by the controls.	
18	<u>(b) The ef</u>	ficiency of a	<u>central furnace</u>	s shall be no	<u>o less than, and</u>
19	<u>the standby lo</u>	ss shall be r	no greater than,	the applica	<u>ble requirements</u>
20	<u>listed in the</u>	following tak	ole:		
0.1	A 1.		<b>1</b>		
21	Appliance	Ap	plication	Minin	num Efficiency %
22 23	Central furnaces with 3.	nhase Mohi	le Homes	75 AFUE	
2.5	electrical supply $< 225$	$\frac{1000}{1000}$	others	78 AFUE or 9	80 Thermal Efficiency
21	$\underline{\text{circurcar suppry}} < 225$ ,			(at manufactu	ror's option)
20					<u>ner s optionj</u>
26	<u>(c) The ef</u>	ficiency of a	duct furnaces,	and unit heat	ters shall be no
27	<u>less than, a</u>	nd the stand	dby loss shall	<u>be no gre</u>	eater than, the
28	<u>applicable req</u>	uirements lis	sted in the foll	lowing table:	
29	Appliance	Fuel	Minimum Thermal Efficier	ncy %nl	Maximum Energy

		At maximum rated	<u>At minimum rated</u>	Consumption during	
		capacity	capacity	standby (watts)	
Duct furnaces	Natural gas	<u>80</u>	<u>75</u>	<u>10</u>	
Duct furnaces	LPG n2	<u>80</u>	<u>75</u>	<u>147</u>	
Unit heaters	Natural gas	<u>80</u>	<u>74</u>	<u>10</u>	
Unit heaters	LPG n2	<u>80</u>	<u>74</u>	<u>147</u>	
Unit heaters	<u>Oil</u>	<u>81</u>	<u>81</u>	<u>N/A</u>	
n1 As provided	and allowed by the c	controls.			
n2 Designed exp	pressly for use with I	<u>LPG.</u>			
<u>(d) Na</u>	<u>atural gas-f</u>	ired unit heate	ers and duct fur	naces manufactured	
<u>on or aft</u>	<u>er January</u>	<u>1, 2009, shall</u>	have either po	<u>ower venting or an</u>	
automatic flue damper.					
(18)(a) The standby loss of hot water dispensers and minitank					
electric water heaters manufactured on or after January 1, 2009, shall					
be not greater than 35 watts.					
<u>(b) Th</u>	<u>nis subsecti</u>	<u>on does not app</u>	<u>ly to any water</u>	<u>heater:</u>	
(i) That is within the scope of 42 U.S.C. Sec. 6292(a)(4) or					
<u>6311(1)(F);</u>					
(ii) That has a rated storage volume of less than 20 gallons; and					
(iii) For which there is no federal test method applicable to that					
type of water heater.					
(19)(a) The energy factor of small water heaters manufactured on or					
after January 1, 2009, that are not federally regulated consumer					
products, other than hot water dispensers, booster water heaters, and					
minitank electric water heaters, shall be no less than the applicable					
requiremen	nts listed i	<u>n the following</u>	table:		
	Duct furnaces Duct furnaces Unit heaters Unit heaters Unit heaters Unit heaters Unit heaters Ini As provided n2 Designed ex (d) Na on or aft automatic (18)(a electric v be not gree (b) Th (i) T (ii) T (iii) T (iii) T (iii) type of wa (19)(a after Jan products, minitank e	Duct furnacesNatural gasDuct furnacesLPG n2Unit heatersNatural gasUnit heatersLPG n2Unit heatersOiln1 As provided and allowed by the constrained expressly for use with I(d) Natural gas-fon or after Januaryautomatic flue damper(18)(a) The stanelectric water heaterbe not greater than 3(b) This subsecti(i) That is with6311(1)(F);(ii) That has a r(iii) For which titype of water heater.(19)(a) The energyafter January 1, 20products, other thanminitank electric water	Linear capacity     Duct furnaces   Natural gas   80     Duct furnaces   LPG n2   80     Unit heaters   Natural gas   80     Unit heaters   Natural gas   80     Unit heaters   LPG n2   80     Unit heaters   LPG n2   80     Unit heaters   Oil   81     nl As provided and allowed by the controls.   n2 Designed expressly for use with LPG.     (d) Natural gas-fired unit heaters   61     automatic flue damper.   (18)(a) The standby loss of heaters     (b) This subsection does not app   6311(1)(F);     (ii) That is within the scope   6311(1)(F);     (iii) That has a rated storage vo   (iii) For which there is no fedeet     type of water heater.   (19)(a) The energy factor of small after January 1, 2009, that are products, other than hot water dispertion of the storage vo is not app products, other than hot water dispertion of the storage vo is not app products, other than hot water dispertion of the storage vo is not app products, other than hot water dispertion of the storage vo is not app products, other than hot water dispertion of the storage vo is not app products, other than hot water dispertion of the storage vo is not app products.	capacity   capacity     Duct furnaces   Natural gas   80   75     Duct furnaces   LPG n2   80   75     Unit heaters   Natural gas   80   74     Unit heaters   LPG n2   80   74     Unit heaters   LPG n2   80   74     Unit heaters   Oil   81   81     nl As provided and allowed by the controls.   n2 Designed expressly for use with LPG.   81     (d) Natural gas-fired unit heaters and duct fur   on or after January 1, 2009, shall have either per automatic flue damper.     (18) (a)   The standby loss of hot water disperselectric water heaters manufactured on or after January be not greater than 35 watts.   (b)     (b)   This subsection does not apply to any water (i)   That is within the scope of 42 U.S.C. Statt (iii)     6311(1)(F):   (13) That has a rated storage volume of less the (iii) For which there is no federal test method type of water heater.     (19) (a)   The energy factor of small water heaters after January 1, 2009, that are not federally products, other than hot water dispensers, booster     products, other than hot water dispensers, shall be no less the initiank electric water heaters, shall be no less the initiank electric water heaters, shall be no less the initiank electric water heaters, shall be no less the initiank electric w	

Table F-5

1	Standards	s for Small Water He	eaters that are not Federally R	egulated Consumer	Products	
2						
3				Rated		
4				<u>Storage</u>		
5		Energy	Input	Volume	Minimum Energy	
6	Appliance	Source	Rating	(gallons)	Factor n1	
7	Storage water heaters	Gas	<u>≤75,000 Btu/hr</u>	<u>&lt; 20</u>	<u>0.62 - (.0019 x V)</u>	
8	Storage water heaters	Gas	<u>≤75,000 Btu/hr</u>	<u>&gt; 100</u>	<u>0.62 - (.0019 x V)</u>	
9	Storage water heaters	<u>Oil</u>	<u>≤ 105,000 Btu/hr</u>	<u>&gt; 50</u>	<u>0.59 - (.0019 x V)</u>	
10	Storage water heaters	Electricity	$\leq 12 \text{ kW}$	<u>&gt; 120</u>	<u>0.93 - (.00132 x V)</u>	
11	Instantaneous water	Gas	<u>≤ 50,000 Btu/hr</u>	Any	<u>0.62 - (.0019 x V)</u>	
12	heaters					
13	Instantaneous water	Gas	<u>≤ 200,000 Btu/hr</u>	<u>≥2</u>	<u>0.62 - (.0019 x V)</u>	
14	heaters					
15	Instantaneous water	<u>Oil</u>	<u>≤ 210,000 Btu/hr</u>	Any	<u>0.59 - (.0019 x V)</u>	
16	heaters					
17	Instantaneous water	Electricity	$\leq 12 \text{ kW}$	Any	<u>0.93 - (.00132 x V)</u>	
18	heaters					
19						
20	<u><math>n1</math> Volume (V) = rated stee</u>	orage volume in galle	ons.			
21	(b) This su	bsection doe	s not apply to a	ny water h	eater:	
22	(i) That is within the scope of 42 U.S.C. Sec. 6292(a)(4) or					
23	6311(1)(F);					
22	(ii) That has a rated storage volume of loss than 20 sellors, and					
25	(iii) For which there is no federal test method applicable to that					
25	(III) For which there is no rederal test method applicable to that					
20	$\frac{\text{cype or water in}}{(20)}$	ollowing at	andarda ara aat	ablighed f	or pool bootorg	
27	(20) The following standards are established for pool heaters,					
28	residential poo	<u>i pumps, and</u>	<u>portable electr</u>	<u>ic spas</u>		
29	<u>(a) Natural</u>	gas pool n	leaters shall not	<u>be equipp</u>	ed with constant	
30	burning pilots.					
31	(b) All pool heaters shall have a readily accessible on-off switch					
32	that is mounted on the outside of the heater and that allows shutting					
33	off the heater without adjusting the thermostat setting.					
34	(c) For heat pump pool heaters manufactured on or after January 1,					
35	2009, the average of the coefficient of performance (COP) at Standard				COP) at Standard	
36	Temperature Rating and the coefficient of performance (COP) at Low					
37	Temperature Rating shall be not less than 3.5.					

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1	<u>(d) Pool pump moto</u>	ors shall meet the fo	llowing standards:		
2	(i) Pool pump motors manufactured on or after January 1, 2009, may				
3	not be split-phase or capacitor start induction run type.				
4	(ii) Pool pump motors with a capacity of 1 HP or more which are				
5	manufactured on or after January 1, 2009, shall have the capability of				
б	operating at two or mo	ore speeds with a low	speed having a rotation rate		
7	<u>that is no more than a</u>	one-half of the motor	's maximum rotation rate.		
8	<u>(iii) Pool pump ma</u>	otor controls manufact	tured on or after January 1,		
9	2009, shall have the o	capability of operation	ng the pool pump at at least		
10	<u>two speeds. The defa</u>	<u>ult circulation speed</u>	shall be the lowest speed,		
11	with a high speed over	rride capability being	g for a temporary period not		
12	to exceed one normal o	cycle.			
13	<u>(e) The standby po</u>	ower of portable elect	tric spas manufactured on or		
14	after January 1, 2009, shall be not greater than $5(V^{2/3})$ watts where V				
15	<u>= the total volume, in gallons.</u>				
16	<u>(21)(a) The leakac</u>	<u>ge rate of tub spout d</u>	iverters shall be no greater		
17	than the applicable re	equirements shown in t	the following table:		
18			Maximum Leakage Rate		
18 19	Appliance	Testing Conditions	Maximum Leakage Rate		
18 19 20	<u>Appliance</u>	<u>Testing Conditions</u> When new	Maximum Leakage Rate Effective January 1, 2009		
18 19 20 21	<u>Appliance</u> Tub spout diverters	<u>Testing Conditions</u> <u>When new</u> After 15,000 cycles of diverting	<u>Maximum Leakage Rate</u> <u>Effective January 1, 2009</u> <u>0.01 gpm</u> 0.05 gpm		
18 19 20 21	<u>Appliance</u> <u>Tub spout diverters</u>	<u>Testing Conditions</u> <u>When new</u> <u>After 15,000 cycles of diverting</u>	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm		
18 19 20 21 22	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tub</u>	<u>Testing Conditions</u> <u>When new</u> <u>After 15,000 cycles of diverting</u> o spout diverter comb:	<u>Maximum Leakage Rate</u> <u>Effective January 1, 2009</u> <u>0.01 gpm</u> <u>0.05 gpm</u> inations shall meet both the		
18 19 20 21 22 23	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tub</u> <u>standard for showerhea</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>o spout diverter comb</u> <u>ads and the standard</u>	<u>Maximum Leakage Rate</u> <u>Effective January 1, 2009</u> <u>0.01 gpm</u> <u>0.05 gpm</u> <u>inations shall meet both the</u> <u>for tub spout diverters.</u>		
18 19 20 21 22 23 24	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tub</u> <u>standard for showerhea</u> <u>(22) The idle energy</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>o spout diverter combinads</u> ads and the standard is <u>rgy rate of commercia</u>	<u>Maximum Leakage Rate</u> <u>Effective January 1, 2009</u> <u>0.01 gpm</u> <u>0.05 gpm</u> <u>inations shall meet both the</u> <u>for tub spout diverters.</u> <u>al hot food holding cabinets</u>		
18 19 20 21 22 23 24 25	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tub</u> <u>standard for showerheat</u> <u>(22) The idle ener</u> <u>manufactured on or af</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>b spout diverter comb</u> : ads and the standard : <u>rgy rate of commercia</u> <u>ter January 1, 2009</u> ,	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. al hot food holding cabinets shall be no greater than 40		
18 19 20 21 22 23 24 25 26	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tub</u> <u>standard for showerhead</u> <u>(22) The idle ener</u> <u>manufactured on or af</u> <u>watts per cubic foot o</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>o spout diverter combinates</u> <u>ads and the standard intercian</u> <u>ter January 1, 2009,</u> <u>of measured interior y</u>	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume.		
18 19 20 21 22 23 24 25 26 27	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tuk</u> <u>standard for showerhea</u> <u>(22) The idle ener</u> <u>manufactured on or af</u> <u>watts per cubic foot of</u> <u>(23) Distribution</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> o spout diverter combinations ads and the standard is rgy rate of commercian ter January 1, 2009, of measured interior work Transformers. The estimation of the standard is the standard the sta	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. Efficiency of all low-voltage		
18 19 20 21 22 23 24 25 26 27 28	Appliance <u>Tub spout diverters</u> <u>(b) Showerhead-tuk</u> <u>standard for showerheat</u> <u>(22) The idle energy</u> <u>manufactured on or af</u> <u>watts per cubic foot of</u> <u>(23) Distribution</u> <u>dry-type distribution</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>b spout diverter comb</u> <u>ads and the standard :</u> <u>rgy rate of commercia</u> <u>ter January 1, 2009,</u> <u>of measured interior y</u> <u>Transformers. The e:</u> <u>transformers when t</u>	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. fficiency of all low-voltage ested at 35 percent of the		
18 19 20 21 22 23 24 25 26 27 28 29	Appliance Tub spout diverters (b) Showerhead-tuk standard for showerhead (22) The idle ener manufactured on or af watts per cubic foot of (23) Distribution dry-type distribution rated output power, ma	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>o spout diverter combinates</u> <u>ads and the standard in ter January 1, 2009,</u> <u>of measured interior y</u> <u>Transformers. The estantian</u> <u>transformers when t</u> <u>anufactured on or afte</u>	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. Efficiency of all low-voltage ested at 35 percent of the er January 1, 2009, shall be		
18 19 20 21 22 23 24 25 26 27 28 29 30	Appliance <u>Tub spout diverters</u> <u>(b) Showerhead-tuk</u> <u>standard for showerhead</u> <u>(22) The idle energy</u> <u>manufactured on or af</u> <u>watts per cubic foot of</u> <u>(23) Distribution</u> <u>dry-type distribution</u> <u>rated output power, manufactured output power, manufactured on the appli</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>o spout diverter combinates</u> <u>ads and the standard in ter January 1, 2009,</u> <u>of measured interior of transformers. The eigenvalues</u> <u>transformers when ter transformers when ter ter January 1, 2009</u> <u>transformers when ter ter Janufactured on or after ter January 1, 2009</u>	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. fficiency of all low-voltage ested at 35 percent of the er January 1, 2009, shall be sted in the following table:		
18 19 20 21 22 23 24 25 26 27 28 29 30 31	<u>Appliance</u> <u>Tub spout diverters</u> <u>(b) Showerhead-tuk</u> <u>standard for showerhead</u> <u>(22) The idle energy</u> <u>manufactured on or af</u> <u>watts per cubic foot of</u> <u>(23) Distribution</u> <u>dry-type distribution</u> <u>rated output power, manufactured output power, manufactured on the appli</u>	Testing Conditions <u>When new</u> <u>After 15,000 cycles of diverting</u> <u>o spout diverter combi-</u> <u>ads and the standard :</u> <u>rgy rate of commercia</u> <u>ter January 1, 2009,</u> <u>of measured interior w</u> <u>Transformers. The e:</u> <u>transformers when t</u> <u>anufactured on or after</u> <u>cable requirements li</u>	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. Efficiency of all low-voltage ested at 35 percent of the er January 1, 2009, shall be sted in the following table:		
18 19 20 21 22 23 24 25 26 27 28 29 30 31 31	Appliance Tub spout diverters (b) Showerhead-tuk standard for showerhead (22) The idle ener manufactured on or af watts per cubic foot of (23) Distribution dry-type distribution rated output power, may no less than the appli	Testing Conditions When new After 15,000 cycles of diverting o spout diverter combi- ads and the standard : rgy rate of commercia ter January 1, 2009, of measured interior y Transformers. The e: transformers when t anufactured on or after cable requirements li	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. fficiency of all low-voltage ested at 35 percent of the er January 1, 2009, shall be sted in the following table: ormers Three Phase		
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33	Appliance Tub spout diverters (b) Showerhead-tuk standard for showerhead (22) The idle ener manufactured on or af watts per cubic foot of (23) Distribution dry-type distribution rated output power, may no less than the appli	Testing Conditions     When new     After 15,000 cycles of diverting     b spout diverter combination combination of a spout diverter combinating diverter combination of a spout diverter combinatin	Maximum Leakage Rate Effective January 1, 2009 0.01 gpm 0.05 gpm inations shall meet both the for tub spout diverters. Al hot food holding cabinets shall be no greater than 40 volume. fficiency of all low-voltage ested at 35 percent of the er January 1, 2009, shall be sted in the following table: ormers Three Phase HPower Minimum		

1	Output kVa	Efficiency %	<u>Output kVa</u>	Efficiency %		
2	<u>≥ 15 &lt; 25</u>	<u>97.7</u>	$\geq 15 < 30$	<u>97.0</u>		
3	<u>≥ 25 &lt; 37.5</u>	<u>98.0</u>	$\geq$ 30 < 45	<u>97.5</u>		
4	<u>≥ 37.5 &lt; 50</u>	<u>98.2</u>	<u>≥ 45 &lt; 75</u>	<u>97.7</u>		
5	<u>≥ 50 &lt; 75</u>	<u>98.3</u>	<u>≥ 75 &lt; 112.5</u>	<u>98.0</u>		
6	≥ 75 < 100	<u>98.5</u>	<u>≥ 112.5 &lt; 150</u>	<u>98.2</u>		
7	$\geq 100 < 167$	<u>98.6</u>	≥ <u>150 &lt; 225</u>	<u>98.3</u>		
8	$\geq 167 < 250$	<u>98.7</u>	<u>≥ 225 &lt; 300</u>	<u>98.5</u>		
9	$\geq$ 250 < 333	<u>98.8</u>	$\geq$ 300 < 500	<u>98.6</u>		
10	<u>333</u>	<u>98.9</u>	$\geq$ 500 < 750	<u>98.7</u>		
11			$\geq$ 750 < 1000	<u>98.8</u>		
12			<u>1000</u>	<u>98.9</u>		
13	<u>(24)(a) The e</u>	efficiency in the	e active mode of p	power supplies when		
14	<u>tested at 115 vol</u>	ts at 60 Hz, mai	nufactured on or a	after the effective		
15	<u>dates shall be</u>	no less than	the applicable	requirements shown		
16	(expressed as the	decimal equival	ent of a percentag	ge); and the energy		
17	<u>consumption in th</u>	<u>e no-load mode c</u>	of power supplies	manufactured on or		
18	after the effect	ive dates when t	ested at 115 volt	<u>ts at 60 Hz, shown</u>		
19	<u>shall be no grea</u>	ter than the ap	<u>oplicable requirem</u>	<u>ments shown in the</u>		
20	following tables:					
21	<u>(i) This tabl</u>	<u>e applies to exte</u>	ernal power suppli	<u>es used with laptop</u>		
22	<u>computers, mobile</u>	phones, printer	s, print servers,	scanners, personal		
23	digital assistant	s (PDAs), and die	gital cameras, on	or after January 1,		
24	2009. This table	applies to exter	nal power supplies	used with wireline		
25	telephones and al	l other applicat:	ions on or after J <sup>.</sup>	uly 1, 2009.		
26	Namenlate Output		Minimum Efficiency in Acti	ve Mode		
27	0  to  < 1  watt		0 49 * Nameplate Output			
28	$\geq 1$ and $\leq 49$ watts		0.09 * L.n. (Namenlate Output	(t) + 0.49		
29	> 49 watts		0.84	<u>() + 0, 12</u>		
30	<u>&gt; 1&gt; watts</u>		Maximum Energy Consump	tion in No-Load Mode		
31	0 to $< 10$ watts		0.5 watts			
32	$\geq 10 \text{ to} \leq 250 \text{ watts}$		0.75 watts			
33						
34	Where Ln (Nameplate Outpu	t) = Natural Logarithm of the	nameplate output expressed in v	watts.		

1	<u>(ii) This table applies to</u>	external power a	supplies on or after July	
2	<u>1, 2010.</u>			
3	Nameplate Output	Minimum Efficie	ncy in Active Mode	
4	<u>&lt; 1 watt</u>	0.5 * Nameplate 0	<u>Dutput</u>	
5	$\geq 1 \text{ and } \leq 51 \text{ watts}$	0.09 * Ln (Namer	blate $Output) + 0.5$	
6	<u>&gt; 51 watts</u>	<u>0.85</u>		
7		Maximum Energy	Consumption in No-Load Mode	
8	Any output	0.5 watts		
9				
10	Where Ln (Nameplate Output) = Natural Logarithm	n of the nameplate output exp	ressed in watts.	
11	(b) A power supply that	<u>is made avail</u>	able by a manufacturer	
12	directly to a consumer or to	<u>a service or re</u>	epair facility after and	
13	separate from the original s	sale of the prod	uct requiring the power	
14	supply as a service part, or spare part shall not be required to meet			
15	the requirements in this subsection until five years after the			
16	effective dates indicated.			
17	<u>(25) The power usage c</u>	of consumer aud:	<u>io and video equipment</u>	
18	manufactured on or after the e	effective dates sl	hown shall be not greater	
19	than the applicable shown in	the following ta	ble. For equipment that	
20	<u>consists of more than one in</u>	dividually power	ed product, each with a	
21	separate main plug, the indiv	idually powered	products shall each have	
22	a power usage not greater than	the applicable :	requirements shown in the	
23	following table:			
24	Appliance Type	Effective Date	Maximum Power Usage (watts)	
25	Compact Audio Products	January 1, 2010	2 W in Audio standby-passive mode	
26			for those without a permanently	
27			illuminated clock display	
28			4 W in Audio standby-passive mode	
29			for those with a permanently	
30			illuminated clock display	
31	Televisions	January 1, 2009	3 W in TV standby-passive mode	
32				

1	Digital Versatile Disc Players and	January 1, 2009	<u>3 W in Video standby-passive mode</u>
2	Digital Versatile Disc Recorders		
3	Digital Television Adapters	January 1, 2011	1 W in standby-passive mode,
4			8 W in STB on mode

--- END ---