

**Department of Energy**

**§ 430.32**

Power Supplies,” August 11, 2004, (incorporated by reference, see § 430.3). Switch-selectable single-voltage external power supplies shall be tested twice—once at the highest nameplate output voltage and once at the lowest.

(ii) Off-Mode Measurement—If the external power supply unit under test incorporates manual on-off switches, the unit under test shall be placed in off mode, and its power consumption in off mode measured and recorded. The measurement of the off mode energy consumption shall conform to the requirements specified in section 5, “Measurement Approach,” of the CEC’s “Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies,” August 11, 2004 (incorporated by reference, see § 430.3), with two exceptions. In section 5.a, “Preparing UUT [Unit Under Test] for Test,” all manual on-off switches shall be placed in the “off” position for the measurement. In section 5.d, “Testing Sequence,” the technician shall consider the UUT stable if, over 5 minutes with samples taken at least once every second, the AC input power does not drift from the maximum value observed by more than 1 percent or 50 milliwatts, whichever is greater. The only loading condition that will be measured for off mode is “Load Condition 5” in Table 1 of the CEC’s test procedure. Switch-selectable single-voltage external power supplies shall have their off mode power consumption measured twice—once at the highest nameplate output voltage and once at the lowest.

(b) Multiple-Voltage External Power Supply. [Reserved]

[71 FR 71366, Dec. 8, 2006, as amended at 74 FR 12066, Mar. 23, 2009; 74 FR 13334, Mar. 27, 2009]

**Subpart C—Energy and Water Conservation Standards**

**§ 430.31 Purpose and scope.**

This subpart contains energy conservation standards and water conservation standards (in the case of faucets, showerheads, water closets, and urinals) for classes of covered products

that are required to be administered by the Department of Energy pursuant to the Energy Conservation Program for Consumer Products Other Than Automobiles under the Energy Policy and Conservation Act, as amended (42 U.S.C. 6291 *et seq.*). Basic models of covered products manufactured before the date on which an amended energy conservation standard or water conservation standard (in the case of faucets, showerheads, water closets, and urinals) becomes effective (or revisions of such models that are manufactured after such date and have the same energy efficiency, energy use characteristics, or water use characteristics (in the case of faucets, showerheads, water closets, and urinals), that comply with the energy conservation standard or water conservation standard (in the case of faucets, showerheads, water closets, and urinals) applicable to such covered products on the day before such date shall be deemed to comply with the amended energy conservation standard or water conservation standard (in the case of faucets, showerheads, water closets, and urinals).

[63 FR 13317, Mar. 18, 1998]

**§ 430.32 Energy and water conservation standards and their effective dates.**

The energy and water (in the case of faucets, showerheads, water closets, and urinals) conservation standards for the covered product classes are:

(a) *Refrigerators/refrigerator-freezers/freezers.* These standards do not apply to refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic feet (1104 liters) or freezers with total refrigerated volume exceeding 30 cubic feet (850 liters).

Product class	Energy standards equations for maximum energy use (kWh/yr)	
	Effective January 1, 1993	Effective July 1, 2001
1. Refrigerators and Refrigerator-freezers with manual defrost .....	13.5AV+299 0.48av+299	8.82AV+248.4 0.31av+248.4
2. Refrigerator-Freezer—partial automatic defrost .....	10.4AV+398 0.37av+398	8.82AV+248.4 0.31av+248.4
3. Refrigerator-Freezers—automatic defrost with top-mounted freezer without through-the-door ice service and all-refrigerators—automatic defrost .....	16.0AV+355 0.57av+355	9.80AV+276.0 0.35av+276.0

Product class	Energy standards equations for maximum energy use (kWh/yr)	
	Effective January 1, 1993	Effective July 1, 2001
4. Refrigerator-Freezers—automatic defrost with side-mounted freezer without through-the-door ice service .....	11.8AV+501 0.42AV+501	4.91AV+507.5 0.17av+507.5
5. Refrigerator-Freezers—automatic defrost with bottom-mounted freezer without through-the-door ice service .....	16.5AV+367 0.58av+367	4.60AV+459.0 0.16av+459.0
6. Refrigerator-Freezers—automatic defrost with top-mounted freezer with through-the-door ice service .....	17.6AV+391 0.62av+391	10.20AV+356.0 0.36av+356.0
7. Refrigerator-Freezers—automatic defrost with side-mounted freezer with through-the-door ice service .....	16.3AV+527 0.58av+527	10.10AV+406.0 0.36av+406.0
8. Upright Freezers with Manual Defrost .....	10.3AV+264 0.36av+264	7.55AV+258.3 0.27av+258.3
9. Upright Freezers with Automatic Defrost .....	14.9AV+391 0.53av+391	12.43AV+326.1 0.44av+326.1
10. Chest Freezers and all other Freezers except Compact Freezers .....	11.0AV+160 0.39av+160	9.88AV+143.7 0.35av+143.7
11. Compact Refrigerators and Refrigerator-Freezers with Manual Defrost .....	13.5AV+299 <sup>a</sup> 0.48av+299 <sup>a</sup>	10.70AV+299.0 0.38av+299.0
12. Compact Refrigerator-Freezer—partial automatic defrost .....	10.4AV+398 <sup>a</sup> 0.37av+398 <sup>a</sup>	7.00AV+398.0 0.25av+398.0
13. Compact Refrigerator-Freezers—automatic defrost with top-mounted freezer and compact all-refrigerators—automatic defrost .....	16.0AV+355 <sup>a</sup> 0.57av+355 <sup>a</sup>	12.70AV+355.0 0.45av+355.0
14. Compact Refrigerator-Freezers—automatic defrost with side-mounted freezer .....	11.8AV+501 <sup>a</sup> 0.42 <sup>av</sup> +501 <sup>a</sup>	7.60AV+501.0 0.27av+501.0
15. Compact Refrigerator-Freezers—automatic defrost with bottom-mounted freezer .....	16.5AV+367 <sup>a</sup> 0.58av+367 <sup>a</sup>	13.10AV+367.0 0.46av+367.0
16. Compact Upright Freezers with Manual Defrost .....	10.3AV+264 <sup>a</sup> 0.36av+264 <sup>a</sup>	9.78AV+250.8 0.35av+250.8
17. Compact Upright Freezers with Automatic Defrost .....	14.9AV+391 <sup>a</sup> 0.53av+391 <sup>a</sup>	11.40AV+391.0 0.40av+391.0
18. Compact Chest Freezers .....	11.0AV+160 <sup>a</sup> 0.39av+160 <sup>a</sup>	10.45AV+152.0 0.37av+152.0

AV=Total adjusted volume, expressed in ft.<sup>3</sup>, as determined in Appendices A1 and B1 of subpart B of this part.  
 av=Total adjusted volume, expressed in Liters.  
<sup>a</sup>Applicable standards for compact refrigerator products manufactured before July 1, 2001. Compact refrigerator products are not separate product categories under the standards effective January 1, 1993.

(b) Room air conditioners.

Product class	Energy efficiency ratio, effective as of	
	Jan. 1, 1990	Oct. 1, 2000
1. Without reverse cycle, with louvered sides, and less than 6,000 Btu/h .....	8.0	9.7
2. Without reverse cycle, with louvered sides, and 6,000 to 7,999 Btu/h .....	8.5	9.7
3. Without reverse cycle, with louvered sides, and 8,000 to 13,999 Btu/h .....	9.0	9.8
4. Without reverse cycle, with louvered sides, and 14,000 to 19,999 Btu/h .....	8.8	9.7
5. Without reverse cycle, with louvered sides, and 20,000 Btu/h or more .....	8.2	8.5
6. Without reverse cycle, without louvered sides, and less than 6,000 Btu/h .....	8.0	9.0
7. Without reverse cycle, without louvered sides, and 6,000 to 7,999 Btu/h .....	8.5	9.0
8. Without reverse cycle, without louvered sides, and 8,000 to 13,999 Btu/h .....	8.5	8.5
9. Without reverse cycle, without louvered sides, and 14,000 to 19,999 Btu/h .....	8.5	8.5
10. Without reverse cycle, without louvered sides, and 20,000 Btu/h or more .....	8.2	8.5
11. With reverse cycle, with louvered sides, and less than 20,000 Btu/h .....	8.5	9.0
12. With reverse cycle, without louvered sides, and less than 14,000 Btu/h .....	8.0	8.5
13. With reverse cycle, with louvered sides, and 20,000 Btu/h or more .....	8.5	8.5
14. With reverse cycle, without louvered sides, and 14,000 Btu/h or more .....	8.0	8.0
15. Casement-Only .....	*	8.7
16. Casement-Slider .....	*	9.5

\* Casement-only and casement-slider room air conditioners are not separate product classes under standards effective January 1, 1990. These units are subject to the applicable standards in classes 1 through 14 based on unit capacity and the presence or absence of louvered sides and a reverse cycle.

**Department of Energy**

**§ 430.32**

(c) *Central air conditioners and heat pumps.* The energy conservation standards defined in terms of the heating seasonal performance factor are based on Region IV, the minimum standardized design heating requirement, and the sampling plan stated in § 430.24(m).

(1) Split system central air conditioners and central air conditioning heat pumps manufactured after January 1, 1992, and before January 23, 2006, and single package central air conditioners and central air conditioning heat pumps manufactured after January 1, 1993, and before January 23, 2006, shall have Seasonal Energy Efficiency Ratio and Heating Seasonal Performance Factor no less than:

Product class	Seasonal energy efficiency ratio	Heating seasonal performance factor
(i) Split systems .....	10.0	6.8
(ii) Single package systems .....	9.7	6.6

(2) Central air conditioners and central air conditioning heat pumps manufactured on or after January 23, 2006,

Product class	Energy factor as of January 20, 2004	Energy factor as of April 16, 2015
Gas-fired Water Heater .....	$0.67 - (0.0019 \times \text{Rated Storage Volume in gallons})$ .	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.675 - (0.0015 \times \text{Rated Storage Volume in gallons})$ . For tanks with a Rated Storage Volume above 55 gallons: $EF = 0.8012 - (0.00078 \times \text{Rated Storage Volume in gallons})$ . $EF = 0.68 - (0.0019 \times \text{Rated Storage Volume in gallons})$ .
Oil-fired Water Heater .....	$0.59 - (0.0019 \times \text{Rated Storage Volume in gallons})$ .	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.960 - (0.0003 \times \text{Rated Storage Volume in gallons})$ . For tanks with a Rated Storage Volume above 55 gallons: $EF = 2.057 - (0.00113 \times \text{Rated Storage Volume in gallons})$ . $EF = 0.93 - (0.00132 \times \text{Rated Storage Volume in gallons})$ .
Electric Water Heater .....	$0.97 - (0.00132 \times \text{Rated Storage Volume in gallons})$ .	For tanks with a Rated Storage Volume at or below 55 gallons: $EF = 0.960 - (0.0003 \times \text{Rated Storage Volume in gallons})$ . For tanks with a Rated Storage Volume above 55 gallons: $EF = 2.057 - (0.00113 \times \text{Rated Storage Volume in gallons})$ . $EF = 0.93 - (0.00132 \times \text{Rated Storage Volume in gallons})$ .
Tabletop Water Heater .....	$0.93 - (0.00132 \times \text{Rated Storage Volume in gallons})$ .	$EF = 0.82 - (0.0019 \times \text{Rated Storage Volume in gallons})$ .
Instantaneous Gas-fired Water Heater.	$0.62 - (0.0019 \times \text{Rated Storage Volume in gallons})$ .	$EF = 0.93 - (0.00132 \times \text{Rated Storage Volume in gallons})$ .
Instantaneous Electric Water Heater.	$0.93 - (0.00132 \times \text{Rated Storage Volume in gallons})$ .	

**Note:** The Rated Storage Volume equals the water storage capacity of a water heater, in gallons, as specified by the manufacturer.

(e) *Furnaces and boilers.* (1) *Furnaces.* (i) The Annual Fuel Utilization Efficiency (AFUE) of residential furnaces manufactured before November 19, 2015, shall not be less than the following:

Product class	AFUE <sup>1</sup> (percent)
(A) Furnaces (excluding classes noted below) ...	78
(B) Mobile Home furnaces .....	75

shall have Seasonal Energy Efficiency Ratio and Heating Seasonal Performance Factor no less than:

Product class	Seasonal energy efficiency ratio (SEER)	Heating seasonal performance factor (HSPF)
(i) Split system air conditioners	13	
(ii) Split system heat pumps .....	13	7.7
(iii) Single package air conditioners .....	13	
(iv) Single package heat pumps	13	7.7
(v)(A) Through-the-wall air conditioners and heat pumps-split system <sup>1</sup> .....	10.9	7.1
(v)(B) Through-the-wall air conditioners and heat pumps-single package <sup>1</sup> .....	10.6	7.0
(vi) Small duct, high velocity systems .....	13	7.7
(vii)(A) Space constrained products-air conditioners .....	12	
(vii)(B) Space constrained products-heat pumps .....	12	7.4

<sup>1</sup> As defined in § 430.2, this product class applies to products manufactured prior to January 23, 2010.

(d) *Water heaters.* The energy factor of water heaters shall not be less than the following for products manufactured on or after the indicated dates.

Product class	AFUE <sup>1</sup> (percent)
(C) Small furnaces (other than those designed solely for installation in mobile homes) having an input rate of less than 45,000 Btu/hr	
(1) Weatherized (outdoor) .....	78
(2) Non-weatherized (indoor) .....	78

<sup>1</sup> Annual Fuel Utilization Efficiency, as determined in § 430.23(n)(2) of this part.

(ii) The AFUE of residential furnaces manufactured on or after November 19,

§ 430.32

10 CFR Ch. II (1–1–11 Edition)

2015, shall not be less than the following:

Product class	AFUE <sup>1</sup> (percent)
(A) Non-weatherized gas furnaces .....	80
(B) Weatherized gas furnaces .....	81
(C) Mobile home oil-fired furnaces .....	75
(D) Mobile home gas furnaces .....	80
(E) Non-weatherized oil-fired furnaces .....	82
(F) Weatherized oil-fired furnaces .....	78

<sup>1</sup>Annual Fuel Utilization Efficiency, as determined in § 430.23(n)(2) of this part.

(2) *Boilers.* (i) The AFUE of residential boilers manufactured before September 1, 2012, shall not be less than the following:

Product class	AFUE <sup>1</sup> (percent)
(A) Boilers (excluding gas steam) .....	80
(B) Gas steam boilers .....	75

<sup>1</sup>Annual Fuel Utilization Efficiency, as determined in § 430.22(n)(2) of this part.

(ii) Except as provided in paragraph (e)(2)(iv) of this section, the AFUE of residential boilers, manufactured on or after September 1, 2012, shall not be less than the following and must comply with the design requirements as follows:

Product class	AFUE <sup>1</sup> (percent)	Design requirements
(A) Gas-fired hot water boiler.	82	Constant burning pilot not permitted. Automatic means for adjusting water temperature required (except for boilers equipped with tankless domestic water heating coils).
(B) Gas-fired steam boiler.	80	Constant burning pilot not permitted.
(C) Oil-fired hot water boiler.	84	Automatic means for adjusting temperature required (except for boilers equipped with tankless domestic water heating coils).
(D) Oil-fired steam boiler.	82	None.
(E) Electric hot water boiler.	None	Automatic means for adjusting temperature required (except for boilers equipped with tankless domestic water heating coils).

<sup>1</sup>Annual Fuel Utilization Efficiency, as determined in § 430.22(n)(2) of this part.

(iii) *Automatic means for adjusting water temperature.* (A) The automatic means for adjusting water temperature as required under paragraph (e)(2)(ii) of this section must automatically adjust the temperature of the water supplied by the boiler to ensure that an incremental change in inferred heat load

produces a corresponding incremental change in the temperature of water supplied.

(B) For boilers that fire at a single input rate, the automatic means for adjusting water temperature requirement may be satisfied by providing an automatic means that allows the burner or heating element to fire only when the means has determined that the inferred heat load cannot be met by the residual heat of the water in the system.

(C) When there is no inferred heat load with respect to a hot water boiler, the automatic means described in this paragraph shall limit the temperature of the water in the boiler to not more than 140 degrees Fahrenheit.

(D) A boiler for which an automatic means for adjusting water temperature is required shall be operable only when the automatic means is installed.

(iv) A boiler that is manufactured to operate without any need for electricity or any electric connection, electric gauges, electric pumps, electric wires, or electric devices is not required to meet the AFUE or design requirements applicable to the boiler requirements of paragraph (e)(2)(ii) of this section, but must meet the requirements of paragraph (e)(2)(i) of this section, as applicable.

(f) *Dishwashers.* (1) The energy factor of dishwashers manufactured on or after May 14, 1994, must not be less than:

Product class	Energy factor (cycles/ kWh)
(i) Compact Dishwasher (capacity less than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 [Incorporated by reference, see § 430.22] using the test load specified in section 2.7 of Appendix C in subpart B) .....	0.62
(ii) Standard Dishwasher (capacity equal to or greater than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 [Incorporated by Reference, see § 430.22] using the test load specified in section 2.7 of Appendix C in subpart B) .....	0.46

(2) All dishwashers manufactured on or after January 1, 2010, shall meet the following standard—

(i) Standard size dishwashers shall not exceed 355 kWh/year and 6.5 gallons per cycle.

**Department of Energy**

**§ 430.32**

(ii) Compact size dishwashers shall not exceed 260 kwh/year and 4.5 gallons per cycle.

(g) *Clothes washers.* (1) Clothes washers manufactured before January 1, 2004, shall have an energy factor no less than:

Product Class	Energy factor (cu.ft./kWh/cycle)
i. Top-Loading, Compact (less than 1.6 ft. <sup>3</sup> capacity).	0.9.
ii. Top-Loading, Standard (1.6 ft. <sup>3</sup> or greater capacity).	1.18.
iii. Top-Loading, Semi-Automatic .....	<sup>1</sup> Not Applicable.
iv. Front-Loading .....	<sup>1</sup> Not Applicable.
v. Suds-saving .....	<sup>1</sup> Not Applicable.

<sup>1</sup> Must have an unheated rinse water option.

(2) Clothes washers manufactured on or after January 1, 2004, and before January 1, 2007, shall have a modified energy factor no less than:

Product Class	Modified energy factor (cu.ft./kWh/cycle)
i. Top-Loading, Compact (less than 1.6 ft. <sup>3</sup> capacity).	0.65.
ii. Top-Loading, Standard (1.6 ft. <sup>3</sup> or greater capacity).	1.04.
iii. Top-Loading, Semi-Automatic .....	<sup>1</sup> Not Applicable.
iv. Front-Loading .....	1.04.
v. Suds-saving .....	<sup>1</sup> Not Applicable.

<sup>1</sup> Must have an unheated rinse water option.

(3) Clothes washers manufactured on or after January 1, 2007, shall have a modified energy factor no less than:

Product Class	Modified energy factor (cu.ft./kWh/cycle)
i. Top-Loading, Compact (less than 1.6 ft. <sup>3</sup> capacity).	0.65.

Product Class	Modified energy factor (cu.ft./kWh/cycle)
ii. Top-Loading, Standard (1.6 ft. <sup>3</sup> or greater capacity).	1.26.
iii. Top-Loading, Semi-Automatic .....	<sup>1</sup> Not Applicable.
iv. Front-Loading .....	1.26.
v. Suds-saving .....	<sup>1</sup> Not Applicable.

<sup>1</sup> Must have an unheated rinse water option.

(4) All top-loading or front-loading standard-size residential clothes washers manufactured on or after January 1, 2011, shall meet the following standard—

(i) A Modified Energy Factor of at least 1.26; and

(ii) A water factor of not more than 9.5.

(h) *Clothes dryers.* (1) Gas clothes dryers manufactured between January 1, 1988, and May 14, 1994, shall not be equipped with a constant burning pilot.

(2) Clothes dryers manufactured on or after May 14, 1994, shall have an energy factor no less than;

Product class	Energy factor (lbs/KWh)
i. Electric, Standard (4.4 ft <sup>3</sup> or greater capacity)	3.01
ii. Electric, Compact (120v) (less than 4.4 ft <sup>3</sup> capacity) .....	3.13
iii. Electric, Compact (240v) (less than 4.4 ft <sup>3</sup> capacity) .....	2.90
iv. Gas .....	2.67

(i) *Direct heating equipment.* (1) Vent-ed home heating equipment manufactured on or after January 1, 1990 and before April 16, 2013, shall have an annual fuel utilization efficiency no less than:

Product class	Annual fuel utilization efficiency, Jan. 1, 1990 (percent)
1. Gas wall fan type up to 42,000 Btu/h .....	73
2. Gas wall fan type over 42,000 Btu/h .....	74
3. Gas wall gravity type up to 10,000 Btu/h .....	59
4. Gas wall gravity type over 10,000 Btu/h up to 12, 000 Btu/h .....	60
5. Gas wall gravity type over 12,000 Btu/h up to 15,000 Btu/h .....	61
6. Gas wall gravity type over 15,000 Btu/h up to 19,000 Btu/h .....	62
7. Gas wall gravity type over 19,000 Btu/h and up to 27,000 Btu/h .....	63
8. Gas wall gravity type over 27,000 Btu/h and up to 46,000 Btu/h .....	64
9. Gas wall gravity type over 46,000 Btu/h .....	65
10. Gas floor up to 37,000 Btu/h .....	56
11. Gas floor over 37,000 Btu/h .....	57
12. Gas room up to 18,000 Btu/h .....	57
13. Gas room over 18,000 Btu/h up to 20,000 Btu/h .....	58
14. Gas room over 20,000 Btu/h up to 27,000 Btu/h .....	63
15. Gas room over 27,000 Btu/h up to 46,000 Btu/h .....	64
16. Gas room over 46,000 Btu/h .....	65

(2) Vented home heating equipment manufactured on or after April 16, 2013, shall have an annual fuel utilization efficiency no less than:

Product class	Annual fuel utilization efficiency, April 16, 2013 (percent)
1. Gas wall fan type up to 42,000 Btu/h .....	75
2. Gas wall fan type over 42,000 Btu/h .....	76
3. Gas wall gravity type up to 27,000 Btu/h .....	65
4. Gas wall gravity type over 27,000 Btu/h up to 46,000 Btu/h .....	66
5. Gas wall gravity type over 46,000 Btu/h .....	67
6. Gas floor up to 37,000 Btu/h .....	57
7. Gas floor over 37,000 Btu/h .....	58
8. Gas room up to 20,000 Btu/h .....	61
9. Gas room over 20,000 Btu/h up to 27,000 Btu/h .....	66
10. Gas room over 27,000 Btu/h up to 46,000 Btu/h .....	67
11. Gas room over 46,000 Btu/h .....	68
12. Gas hearth up to 20,000 Btu/h .....	61
13. Gas hearth over 20,000 Btu/h and up to 27,000 Btu/h .....	66
14. Gas hearth over 27,000 Btu/h and up to 46,000 Btu/h .....	67
15. Gas hearth over 46,000 Btu/h .....	68

(j) *Cooking Products.* (1) Gas cooking products with an electrical supply cord shall not be equipped with a constant burning pilot light. This standard is effective on January 1, 1990.

(2) Gas cooking products without an electrical supply cord shall not be equipped with a constant burning pilot light. This standard is effective on April 9, 2012.

(k) *Pool heaters.* (1) Gas-fired pool heaters manufactured on or after January 1, 1990 and before April 16, 2013, shall have a thermal efficiency not less than 78%.

(2) Gas-fired pool heaters manufactured on or after April 16, 2013, shall have a thermal efficiency not less than 82%.

(1) *Television sets.* [Reserved]

(m)(1) *Fluorescent lamp ballasts (other than specialty application mercury vapor lamp ballasts).* Except as provided in paragraphs (m)(2), (m)(3), (m)(4), (m)(5), (m)(6) and (m)(7) of this section, each fluorescent lamp ballast—

(i) (A) Manufactured on or after January 1, 1990;

(B) Sold by the manufacturer on or after April 1, 1990; or

(C) Incorporated into a luminaire by a luminaire manufacturer on or after April 1, 1991; and

(ii) Designed—

(A) To operate at nominal input voltages of 120 or 277 volts;

(B) To operate with an input current frequency of 60 Hertz; and

(C) For use in connection with an F40T12, F96T12, or F96T12HO lamps shall have a power factor of 0.90 or greater and shall have a ballast efficacy factor not less than the following:

Application for operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40 T12 lamp .....	120	40	1.805
	277	40	1.805
Two F40 T12 lamps .....	120	80	1.060
	277	80	1.050
Two F96T12 lamps .....	120	150	0.570
	277	150	0.570
Two F96T12HO lamps ..	120	220	0.390
	277	220	0.390

(2) The standards described in paragraph (m)(1) of this section do not apply to—

(i) A ballast that is designed for dimming or for use in ambient temperatures of 0 °F or less, or

(ii) A ballast that has a power factor of less than 0.90 and is designed for use only in residential building applications.

(3) Except as provided in paragraph (m)(4) of this section, each fluorescent lamp ballast—

(i) (A) Manufactured on or after April 1, 2005;

(B) Sold by the manufacturer on or after July 1, 2005; or

(C) Incorporated into a luminaire by a luminaire manufacturer on or after April 1, 2006; and

(ii) Designed—

(A) To operate at nominal input voltages of 120 or 277 volts;

**Department of Energy**

**§ 430.32**

(B) To operate with an input current frequency of 60 Hertz; and

(C) For use in connection with an F40T12, F96T12, or F96T12HO lamps; shall have a power factor of 0.90 or greater and shall have a ballast efficacy factor not less than the following:

Application of operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40 T12 lamp .....	120	40	2.29
	277	40	2.29
Two F40 T12 lamps .....	120	80	1.17
	277	80	1.17
Two F96T12 lamps .....	120	150	0.63
	277	150	0.63
Two F96T12HO lamps ..	120	220	0.39
	277	220	0.39

(4) (i) The standards described in paragraph (m)(3) do not apply to:

(A) A ballast that is designed for dimming to 50 percent or less of its maximum output;

(B) A ballast that is designed for use with two F96T12HO lamps at ambient temperatures of -20 °F or less and for use in an outdoor sign;

(C) A ballast that has a power factor of less than 0.90 and is designed and labeled for use only in residential building applications; or

(D) A replacement ballast as defined in paragraph (m)(4)(ii) of this section.

(ii) For purposes of this paragraph (m), a replacement ballast is defined as a ballast that:

(A) Is manufactured on or before June 30, 2010;

(B) Is designed for use to replace an existing ballast in a previously installed luminaire;

(C) Is marked "FOR REPLACEMENT USE ONLY";

(D) Is shipped by the manufacturer in packages containing not more than 10 ballasts;

(E) Has output leads that when fully extended are a total length that is less than the length of the lamp with which it is intended to be operated; and

(F) Meets or exceeds the ballast efficacy factor in the following table:

Application for operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40 T12 lamp .....	120	40	1.805
	277	40	1.805
Two F40 T12 lamps .....	120	80	1.060
	277	80	1.050
Two F96T12 lamps .....	120	150	0.570
	277	150	0.570
Two F96T12HO lamps ..	120	220	0.390
	277	220	0.390

(5) Except as provided in paragraph (m)(7) of this section, each fluorescent lamp ballast (other than replacement ballasts defined in § 430.2)—

(i)(A) Manufactured on or after July 1, 2009;

(B) Sold by the manufacturer on or after October 1, 2009; or

(C) Incorporated into a luminaire by a luminaire manufacturer on or after July 1, 2010; and

(ii) Designed—

(A) To operate at nominal input voltages of 120 or 277 volts;

(B) To operate with an input current frequency of 60 Hertz; and

(C) For use in connection with F34T12 lamps, F96T12/ES lamps, or F96T12HO/ES lamps; shall have a power factor of 0.90 or greater and shall have a ballast efficacy factor of not less than the following:

Application for operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F34T12 lamp .....	120/277	34	2.61
Two F34T12 lamps .....	120/277	68	1.35
Two F96T12/ES lamps .....	120/277	120	0.77
Two F96T12HO/ES lamps .....	120/277	190	0.42

(6) The standards in paragraph (m)(5) shall apply to all ballasts covered by paragraph (m)(5)(ii), including replacement ballasts and ballasts described in paragraph (m)(7) of this section, that are manufactured on or after July 1,

2010, or sold by the manufacturer on or after October 1, 2010.

(7) The standards in paragraph (m)(5) do not apply to—

(i) A ballast that is designed for dimming to 50 percent or less of the maximum output of the ballast;

§ 430.32

10 CFR Ch. II (1–1–11 Edition)

(ii) A ballast that is designed for use with 2 F96T12HO lamps at ambient temperatures of 20 degrees F or less and for use in an outdoor sign; or

(iii) A ballast that has a power factor of less than 0.90 and is designed and labeled for use only in residential applications.

(n) *General service fluorescent lamps and incandescent reflector lamps.* (1) Except as provided in paragraphs (n)(2) and (n)(3) of this section, each of the following general service fluorescent lamps manufactured after the effective dates specified in the table shall meet or exceed the following lamp efficacy and CRI standards:

Lamp type	Nominal lamp wattage	Minimum CRI	Minimum average lamp efficacy (lm/W)	Effective date
4-foot medium bipin .....	>35W	69	75.0	Nov. 1, 1995.
	≤35W	45	75.0	Nov. 1, 1995.
2-foot U-shaped .....	>35W	69	68.0	Nov. 1, 1995.
	≤35W	45	64.0	Nov. 1, 1995.
8-foot slimline .....	>65W	69	80.0	May 1, 1994.
	>65W	45	80.0	May 1, 1994.
	>100W	69	80.0	May 1, 1994.
8-foot high output .....	>100W	45	80.0	May 1, 1994.
	≤100W	69	80.0	May 1, 1994.

(2) The standards described in paragraph (n)(1) of this section do not apply to:

(i) Any 4-foot medium bipin lamp or 2-foot U-shaped lamp with a rated wattage less than 28 watts;

(ii) Any 8-foot high output lamp not defined in ANSI C78.81 (incorporated by reference; see § 430.3) or related supplements, or not 0.800 nominal amperes; or

(iii) Any 8-foot slimline lamp not defined in ANSI C78.3 (incorporated by reference; see § 430.3).

(3) Each of the following general service fluorescent lamps manufactured after July 14, 2012, shall meet or exceed the following lamp efficacy standards shown in the table:

Lamp type	Correlated color temperature	Minimum average lamp efficacy (lm/W)
4-foot medium bipin .....	≤4,500K .....	89
	>4,500K and ≤7,000K .....	88
2-foot U-shaped .....	≤4,500K .....	84
	>4,500K and ≤7,000K .....	81
8-foot slimline .....	≤4,500K .....	97
	>4,500K and ≤7,000K .....	93
8-foot high output .....	≤4,500K .....	92
	>4,500K and ≤7,000K .....	88
4-foot miniature bipin standard output .....	≤4,500K .....	86
	>4,500K and ≤7,000K .....	81
4-foot miniature bipin high output .....	≤4,500K .....	76
	>4,500K and ≤7,000K .....	72

(4) Except as provided in paragraph (n)(5) of this section, each of the following incandescent reflector lamps manufactured after November 1, 1995, shall meet or exceed the lamp efficacy standards shown in the table:

Nominal lamp wattage	Minimum average lamp efficacy (lm/W)
40–50 .....	10.5
51–66 .....	11.0
67–85 .....	12.5
86–115 .....	14.0
116–155 .....	14.5
156–205 .....	15.0



Department of Energy

§ 430.32

(5) Each of the following incandescent reflector lamps manufactured after July 14, 2012, shall meet or exceed

the lamp efficacy standards shown in the table:

Rated lamp wattage	Lamp spectrum	Lamp diameter (inches)	Rated voltage	Minimum average lamp efficacy (lm/W)
40-205 .....	Standard Spectrum .....	>2.5	≥125V <125V	6.8*P <sup>0.27</sup> 5.9*P <sup>0.27</sup>
		≤2.5	≥125V <125V	5.7*P <sup>0.27</sup> 5.0*P <sup>0.27</sup>
40-205 .....	Modified Spectrum .....	>2.5	≤125V <125V	5.8*P <sup>0.27</sup> 5.0*P <sup>0.27</sup>
		≤2.5	≥125V <125V	4.9*P <sup>0.27</sup> 4.2*P <sup>0.27</sup>

Note 1: P is equal to the rated lamp wattage, in watts.

Note 2: Standard Spectrum means any incandescent reflector lamp that does not meet the definition of modified spectrum in 430.2.

(6) (i)(A) Subject to the exclusions in paragraph (n)(6)(ii) of this section, the standards specified in this section shall apply to ER incandescent reflector lamps, BR incandescent reflector lamps, BPAR incandescent reflector lamps, and similar bulb shapes on and after January 1, 2008.

(B) Subject to the exclusions in paragraph (n)(6)(ii) of this section, the standards specified in this section shall apply to incandescent reflector lamps with a diameter of more than 2.25 inches, but not more than 2.75 inches, on and after June 15, 2008.

(ii) The standards specified in this section shall not apply to the following types of incandescent reflector lamps:

(A) Lamps rated at 50 watts or less that are ER30, BR30, BR40, or ER40 lamps;

(B) Lamps rated at 65 watts that are BR30, BR40, or ER40 lamps; or

(C) R20 incandescent reflector lamps rated 45 watts or less.

(o) *Faucets.* The maximum water use allowed for any of the following faucets manufactured after January 1, 1994, when measured at a flowing water pressure of 60 pounds per square inch (414 kilopascals), shall be as follows:

Faucet type	Maximum flow rate (gpm (L/min)) or (gal/cycle (L/cycle))
Lavatory faucets .....	2.2 gpm (8.3 L/min) <sup>1,2</sup>
Lavatory replacement aerators.	2.2 gpm (8.3 L/min)
Kitchen faucets .....	2.2 gpm (8.3 L/min)
Kitchen replacement aerators.	2.2 gpm (8.3 L/min)
Metering faucets .....	0.25 gal/cycle (0.95 L/cycle) <sup>3,4</sup>

NOTE:

<sup>1</sup> Sprayheads with independently-controlled orifices and manual controls.

The maximum flow rate of each orifice that manually turns on or off shall not exceed the maximum flow rate for a lavatory faucet.

<sup>2</sup> Sprayheads with collectively controlled orifices and manual controls.

The maximum flow rate of a sprayhead that manually turns on or off shall be the product of (a) the maximum flow rate for a lavatory faucet and (b) the number of component lavatories (rim space of the lavatory in inches (millimeters) divided by 20 inches (508 millimeters)).

<sup>3</sup> Sprayheads with independently controlled orifices and metered controls.

The maximum flow rate of each orifice that delivers a preset volume of water before gradually shutting itself off shall not exceed the maximum flow rate for a metering faucet.

<sup>4</sup> Sprayheads with collectively-controlled orifices and metered controls.

The maximum flow rate of a sprayhead that delivers a preset volume of water before gradually shutting itself off shall be the product of (a) the maximum flow rate for a metering faucet and (b) the number of component lavatories (rim space of the lavatory in inches (millimeters) divided by 20 inches (508 millimeters)).

(p) *Showerheads.* The maximum water use allowed for any showerheads manufactured after January 1, 1994, shall be 2.5 gallons per minute (9.5 liters per minute) when measured at a flowing pressure of 80 pounds per square inch gage (552 kilopascals). Any such showerhead shall also meet the requirements of ASME/ANSI Standard A112.18.1M-1996, 7.4.4(a).

(q) *Water closets.* (1) The maximum water use allowed in gallons per flush for any of the following water closets manufactured after January 1, 1994, shall be as follows:

Water closet type	Maximum flush rate (gpf (Lpf))
Gravity tank-type toilets .....	1.6 (6.0)
Flushometer tank toilets .....	1.6 (6.0)
Electromechanical hydraulic toilets .....	1.6 (6.0)
Blowout toilets .....	3.5 (13.2)

§ 430.32

10 CFR Ch. II (1–11 Edition)

(2) The maximum water use allowed for flushometer valve toilets, other than blowout toilets, manufactured after January 1, 1997, shall be 1.6 gallons per flush (6.0 liters per flush).

(r) *Urinals*. The maximum water use allowed for any urinals manufactured after January 1, 1994, shall be 1.0 gallons per flush (3.8 liters per flush). The maximum water use allowed for a trough-type urinal shall be the product of:

- (1) The maximum flow rate for a urinal and
- (2) The length of the trough-type urinal in inches (millimeter) divided by 16 inches (406 millimeters).

(s) *Ceiling fans and ceiling fan light kits*. (1) All ceiling fans manufactured on or after January 1, 2007, shall have the following features:

- (i) Fan speed controls separate from any lighting controls;
- (ii) Adjustable speed controls (either more than 1 speed or variable speed);
- (iii) The capability of reversible fan action, except for—
  - (A) Fans sold for industrial applications;
  - (B) Fans sold for outdoor applications; and
  - (C) Cases in which safety standards would be violated by the use of the reversible mode.

(2)(i) Ceiling fan light kits with medium screw base sockets manufactured on or after January 1, 2007, shall be packaged with screw-based lamps to fill all screw base sockets.

(ii) The screw-based lamps required under paragraph (2)(i) of this section shall—

(A) Meet the ENERGY STAR Program requirements for Compact Fluorescent Lamps, version 3; or

(B) Use light sources other than compact fluorescent lamps that have lumens per watt performance at least equivalent to comparable configured compact fluorescent lamps meeting the energy conservation standards described in paragraph (2)(ii)(A) of this section.

(3) Ceiling fan light kits with pin-based sockets for fluorescent lamps manufactured on or after January 1, 2007 shall—

(i) Meet the ENERGY STAR Program Requirements for Residential Light Fixtures version 4.0 issued by the Environmental Protection Agency; and

(ii) Shall be packaged to include the lamps described in paragraph (s)(3)(i) of this section with the ceiling fan light kits to fill all sockets.

(4) Ceiling fan light kits with socket types other than those covered in paragraphs (2) and (3) of this section, including candelabra screw base sockets, manufactured on or after January 1, 2009—

(i) Shall not be capable of operating with lamps that total more than 190 watts; and

(ii) Shall be packaged to include the lamps described in clause (i) with the ceiling fan light kits.

(t) *Torchieres*. A torchiere manufactured on or after January 1, 2006 shall:

(1) Consume not more than 190 watts of power; and

(2) Not be capable of operating with lamps that total more than 190 watts.

(u) *Medium Base Compact Fluorescent Lamps*. A bare lamp and covered lamp (no reflector) medium base compact fluorescent lamp manufactured on or after January 1, 2006, shall meet the following requirements:

Factor	Requirements
Lamp Power (Watts) & Configuration <sup>1</sup> .....	Minimum Efficacy: lumens/watt(Based upon initial lumen data). <sup>2</sup>
<i>Bare Lamp:</i>	
Lamp Power <15 .....	45.0.
Lamp Power ≥15 .....	60.0.
<i>Covered Lamp (no reflector):</i>	
Lamp Power <15 .....	40.0.
15≥ Lamp Power <19 .....	48.0.
19≥ Lamp Power <25 .....	50.0.
Lamp Power ≥25 .....	55.0.
1,000-hour Lumen Maintenance .....	The average of at least 5 lamps must be a minimum 90.0% of initial (100-hour) lumen output @ 1,000 hours of rated life.

Factor	Requirements
Lumen Maintenance .....	80.0% of initial (100-hour) rating at 40 percent of rated life (per ANSI C78.5 Clause 4.10).
Rapid Cycle Stress Test .....	Per ANSI C78.5 and IESNA LM-65 (clauses 2,3,5, and 6). <i>Exception:</i> Cycle times must be 5 minutes on, 5 minutes off. Lamp will be cycled once for every two hours of rated life. At least 5 lamps <i>must meet or exceed</i> the minimum number of cycles.
Average Rated Lamp Life .....	≥6,000 hours as declared by the manufacturer on packaging. At 80% of rated life, statistical methods may be used to confirm lifetime claims based on sampling performance.

<sup>1</sup> Take performance and electrical requirements at the end of the 100-hour aging period according to ANSI Standard C78.5. The lamp efficacy shall be the average of the lesser of the lumens per watt measured in the base up and/or other specified positions. Use wattages placed on packaging to select proper specification efficacy in this table, not measured wattage. Labeled wattages are for reference only.

<sup>2</sup> Efficacies are based on measured values for lumens and wattages from pertinent test data. Wattages and lumens placed on packages may not be used in calculation and are not governed by this specification. For multi-level or dimmable systems, measurements shall be at the highest setting. Acceptable measurement error is ±3%.

(v) *Dehumidifiers.* (1) Dehumidifiers manufactured on or after October 1, 2007, shall have an energy factor that meets or exceeds the following values:

Product capacity (pints/day)	Minimum energy factor (liters/kWh)
25.00 or less .....	1.00
25.01–35.00 .....	1.20
35.01–54.00 .....	1.30
54.01–74.99 .....	1.50
75.00 or more .....	2.25

(2) Dehumidifiers manufactured on or after October 1, 2012, shall have an en-

ergy factor that meets or exceeds the following values:

Product capacity (pints/day)	Minimum energy factor (liters/kWh)
Up to 35.00 .....	1.35
35.01–45.00 .....	1.50
45.01–54.00 .....	1.60
54.01–75.00 .....	1.70
75.00 or more .....	2.5

(w) *Class A external power supplies.* (1)(i) Except as provided in paragraph (w)(1)(ii) of this section, all class A external power supplies manufactured on or after July 1, 2008, shall meet the following standards:

Active Mode	
Nameplate Output	Required efficiency (decimal equivalent of a percentage)
Less than 1 watt .....	0.5 times the Nameplate output.
From 1 watt to not more than 51 watts .....	The sum of 0.09 times the Natural Logarithm of the Nameplate Output and 0.5.
Greater than 51 watts .....	0.85.
No-Load Mode	
Nameplate output	Maximum consumption
Not more than 250 watts .....	0.5 watts.

(ii) A class A external power supply shall not be subject to the standards in paragraph w(1)(i) if the class A external power supply is—

(A) Manufactured during the period beginning on July 1, 2008, and ending on June 30, 2015, and

(B) Made available by the manufacturer as a service part or a spare part for an end-use product—

(1) That constitutes the primary load; and

(2) Was manufactured before July 1, 2008.

(3) The standards described in paragraph (w)(1)(i) shall not constitute an energy conservation standard for the separate end-use product to which the external power supply is connected.

§ 430.32

10 CFR Ch. II (1–1–11 Edition)

(4) Any class A external power supply manufactured on or after July 1, 2008 shall be clearly and permanently marked in accordance with the External Power Supply International Efficiency Marking Protocol, as referenced in the 'Energy Star Program Requirements for Single Voltage External Ac-Dc and Ac-Ac Power Supplies,' (incorporated by reference; see §430.3), published by the Environmental Protection Agency.

(x) *General service incandescent lamps, intermediate base incandescent lamps and candelabra base incandescent lamps.* (1) The energy conservation standards in this paragraph apply to general service incandescent lamps:

(i) Intended for a general service or general illumination application (whether incandescent or not);

(ii) Has a medium screw base or any other screw base not defined in ANSI C81.61 (incorporated by reference; see §430.3); and

(iii) Is capable of being operated at a voltage at least partially within the range of 110 to 130 volts.

(A) General service incandescent lamps manufactured after the effective dates specified in the tables below, except as described in paragraph (x)(1)(B) of this section, shall have a color rendering index greater than or equal to 80 and shall have rated wattage no greater than and rated lifetime no less than the values shown in the table below:

GENERAL SERVICE INCANDESCENT LAMPS

Rated lumen ranges	Maximum rate wattage	Minimum rate life-time	Effective date
1490–2600 .....	72	1,000 hrs .....	1/1/2012
1050–1489 .....	53	1,000 hrs .....	1/1/2013
750–1049 .....	43	1,000 hrs .....	1/1/2014
310–749 .....	29	1,000 hrs .....	1/1/2014

(B) Modified spectrum general service incandescent lamps manufactured after the effective dates specified shall have a color rendering index greater

than or equal to 75 and shall have a rated wattage no greater than and rated lifetime no less than the values shown in the table below:

MODIFIED SPECTRUM GENERAL SERVICE INCANDESCENT LAMPS

Rated lumen ranges	Maximum rate wattage	Minimum rate life-time	Effective date
1118–1950 .....	72	1,000 hrs .....	1/1/2012
788–1117 .....	53	1,000 hrs .....	1/1/2013
563–787 .....	43	1,000 hrs .....	1/1/2014
232–562 .....	29	1,000 hrs .....	1/1/2014

(2) Each candelabra base incandescent lamp shall not exceed 60 rated watts.

(3) Each intermediate base incandescent lamp shall not exceed 40 rated watts.

[54 FR 6077, Feb. 7, 1989]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting §430.32, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at www.fdsys.gov.

EFFECTIVE DATE NOTE: At 75 FR 78874, Dec. 16, 2010, §430.32 was amended by revising paragraph (a) introductory text, effective

Jan. 18, 2011. For the convenience of the user, the revised text is set forth as follows:

**§ 430.32 Energy and water conservation standards and their effective dates.**

\* \* \*

(a) *Refrigerators/refrigerator-freezers/freezers.* These standards do not apply to refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic foot (1104 liters) or freezers with total refrigerated volume exceeding 30 cubic foot (850 liters). The energy standards as determined by the equations of the following table shall be rounded off to the nearest kWh per year. If the equation calculation is halfway between the nearest two kWh per year values, the standard

**Department of Energy**

**§ 430.35**

shall be rounded up to the higher of these values.

\* \* \* \* \*

**§ 430.33 Preemption of State regulations.**

(a) Any State regulation providing for any energy conservation standard, or water conservation standard (in the case of faucets, showerheads, water closets, and urinals), or other requirement with respect to the energy efficiency, energy use, or water use (in the case of faucets, showerheads, water closets, or urinals) of a covered product that is not identical to a Federal standard in effect under this subpart is preempted by that standard, except as provided for in sections 325(i)(6)(A)(vi), 327(b) and (c) of the Act.

(b) No State regulation, or revision thereof, concerning the energy efficiency, energy use, or water use of the covered product shall be effective with respect to such covered product, unless the State regulation or revision in the case of any portion of any regulation that establishes requirements for general service incandescent lamps, intermediate base incandescent lamps, or candelabra base lamps, was enacted or adopted by the State of California or Nevada before December 4, 2007, except that—

(1) The regulation adopted by the California Energy Commission with an effective date of January 1, 2008, shall only be effective until the effective date of the Federal standard for the applicable lamp category under paragraphs (A), (B), and (C) of section 325(i)(1) of EPCA;

(2) The States of California and Nevada may, at any time, modify or adopt a State standard for general service lamps to conform with Federal standards with effective dates no earlier than 12 months prior to the Federal effective dates prescribed under paragraphs (A), (B), and (C) of section 325(i)(1) of EPCA, at which time any prior regulations adopted by the State of California or Nevada shall no longer be effective; and

(3) All other States may, at any time, modify or adopt a State standard for

general service lamps to conform with Federal standards and effective dates.

[63 FR 13318, Mar. 18, 1998, as amended at 74 FR 12070, Mar. 23, 2009]

**§ 430.34 Energy and water conservation standards amendments**

The Department of Energy may not prescribe any amended standard which increases the maximum allowable energy use or, in the case of showerheads, faucets, water closets or urinals, the maximum allowable water use, or which decreases the minimum required energy efficiency of a covered product.

[67 FR 36406, May 23, 2002]

**§ 430.35 Petitions with respect to general service lamps.**

(a) Any person may petition the Secretary for an exemption for a type of general service lamp from the requirements of this subpart. The Secretary may grant an exemption only to the extent that the Secretary finds, after a hearing and opportunity for public comment, that it is not technically feasible to serve a specialized lighting application (such as a military, medical, public safety or certified historic lighting application) using a lamp that meets the requirements of this subpart. To grant an exemption for a product under this paragraph, the Secretary shall include, as an additional criterion, that the exempted product is unlikely to be used in a general service lighting application.

(b) Any person may petition the Secretary to establish standards for lamp shapes or bases that are excluded from the definition of general service lamps. The petition shall include evidence that the availability or sales of exempted lamps have increased significantly since December 19, 2007. The Secretary shall grant a petition if the Secretary finds that:

(1) The petition presents evidence that demonstrates that commercial availability or sales of exempted incandescent lamp types have increased significantly since December 19, 2007 and are being widely used in general lighting applications; and

(2) Significant energy savings could be achieved by covering exempted

products, as determined by the Secretary based on sales data provided to the Secretary from manufacturers and importers.

[74 FR 12070, Mar. 23, 2009]

APPENDIX A TO SUBPART C OF PART 430—PROCEDURES, INTERPRETATIONS AND POLICIES FOR CONSIDERATION OF NEW OR REVISED ENERGY CONSERVATION STANDARDS FOR CONSUMER PRODUCTS

1. Objectives
2. Scope
3. Setting Priorities for Rulemaking Activity
4. Process for Developing Efficiency Standards and Factors to be Considered
5. Policies on Selection of Standards
6. Effective Date of a Standard
7. Test Procedures
8. Joint Stakeholder Recommendations
9. Principles for the Conduct of Engineering Analysis
10. Principles for the Analysis of Impacts on Manufacturers
11. Principles for the Analysis of Impacts on Consumers
12. Consideration of Non-Regulatory Approaches
13. Crosscutting Analytical Assumptions
14. Deviations, Revisions, and Judicial Review

1. Objectives

This Appendix establishes procedures, interpretations and policies to guide the DOE in the consideration and promulgation of new or revised appliance efficiency standards under the Energy Policy and Conservation Act (EPCA). The Department's objectives in establishing these guidelines include:

(a) *Provide for early input from stakeholders.* The Department seeks to provide opportunities for public input early in the rulemaking process so that the initiation and direction of rulemakings is informed by comment from interested parties. Under the guidelines established by this Appendix, DOE will seek early input from interested parties in setting rulemaking priorities and structuring the analyses for particular products. Interested parties will be invited to provide input for the selection of design options and will help DOE identify analysis, data, and modeling needs. DOE will gather input from interested parties through a variety of mechanisms, including public workshops.

(b) *Increase predictability of the rulemaking timetable.* The Department seeks to make informed, strategic decisions about how to deploy its resources on the range of possible standards development activities, and to announce these prioritization decisions so that

all interested parties have a common expectation about the timing of different rule-making activities. The guidelines in this Appendix provide for setting priorities and timetables for standards development and test procedure modification and reflect these priorities in the Regulatory Agenda.

(c) *Increase use of outside technical expertise.* The Department seeks to expand its use of outside technical experts in evaluating product-specific engineering issues to ensure that decisions on technical issues are fully informed. The guidelines in this Appendix provide for increased use of outside technical experts in developing, performing and reviewing the analyses. Draft analytical results will be distributed for peer and stakeholder review.

(d) *Eliminate problematic design options early in the process.* The Department seeks to eliminate from consideration, early in the process, any design options that present unacceptable problems with respect to manufacturability, consumer utility, or safety, so that the detailed analysis can focus only on viable design options. Under the guidelines in this Appendix, DOE will eliminate from consideration design options if it concludes that manufacture, installation or service of the design will be impractical, or that the design option will adversely affect the utility of the product, or if the design has adverse safety or health impacts. This screening will be done at the outset of a rulemaking.

(e) *Fully consider non-regulatory approaches.* The Department seeks to understand the effects of market forces and voluntary programs on encouraging the purchase of energy efficient products so that the incremental impacts of a new or revised standard can be accurately assessed and the Department can make informed decisions about where standards and voluntary "market pull" programs can be used most effectively. Under the guidelines in this Appendix, DOE will solicit information on the effectiveness of market forces and non-regulatory approaches for encouraging the purchase of energy efficient products, and will carefully consider this information in assessing the benefits of standards. In addition, DOE will continue to support voluntary efforts by manufacturers, retailers, utilities and others to increase product efficiency.

(f) *Conduct thorough analysis of impacts.* In addition to understanding the aggregate costs and benefits of standards, the Department seeks to understand the distribution of those costs and benefits among consumers, manufacturers and others, and the uncertainty associated with these analyses of costs and benefits, so that any adverse impacts on significant subgroups and uncertainty concerning any adverse impacts can be fully considered in selecting a standard. Under the guidelines in this Appendix, the

analyses will consider the variability of impacts on significant groups of manufacturers and consumers in addition to aggregate costs and benefits, report the range of uncertainty associated with these impacts, and take into account cumulative impacts of regulation on manufacturers.

(g) *Use transparent and robust analytical methods.* The Department seeks to use qualitative and quantitative analytical methods that are fully documented for the public and that produce results that can be explained and reproduced, so that the analytical underpinnings for policy decisions on standards are as sound and well-accepted as possible. Under the guidelines in this Appendix, DOE will solicit input from interested parties in identifying analysis, data, and modeling needs with respect to measurement of impacts on manufacturers and consumers.

(h) *Articulate policies to guide selection of standards.* The Department seeks to adopt policies elaborating on the statutory criteria for selecting standards, so that interested parties are aware of the policies that will guide these decisions. Under the guidelines in this Appendix, policies for screening design options, selecting candidate standard levels, selecting a proposed standard level, and establishing the final standard are established.

(i) *Support efforts to build consensus on standards.* The Department seeks to encourage development of consensus proposals for new or revised standards because standards with such broad-based support are likely to balance effectively the economic, energy, and environmental interests affected by standards. Under the guidelines in this Appendix, DOE will support the development and submission of consensus recommendations for standards by representative groups of interested parties to the fullest extent possible.

(j) *Reduce time and cost of developing standards.* The Department seeks to establish a clear protocol for initiating and conducting standards rulemakings in order to eliminate time-consuming and costly missteps. Under the guidelines in this Appendix, increased and earlier involvement by interested parties and increased use of technical experts should minimize the need for re-analysis. This process should reduce the period between the publication of an Advance Notice of Proposed Rulemaking (ANOPR) and the publication of a final rule to not more than 18 months, and should decrease the government and private sector resources required to complete the standard development process.

## 2. Scope

(a) The procedures, interpretations and policies described in this Appendix will be fully applicable to:

(1) Rulemakings concerning new or revised Federal energy conservation standards for consumer products initiated after August 14, 1996, and

(2) Rulemakings concerning new or revised Federal energy conservation standards for consumer products that have been initiated but for which a Notice of Proposed Rulemaking (NOPR) has not been published as of August 14, 1996.

(b) For rulemakings described in paragraph (a)(2) of this section, to the extent analytical work has already been done or public comment on an ANOPR has already been provided, such analyses and comment will be considered, as appropriate, in proceeding under the new process.

(c) With respect to incomplete rulemakings concerning new or revised Federal energy conservation standards for consumer products for which a NOPR was published prior to August 14, 1996, the Department will conduct a case-by-case review to decide whether any of the analytical or procedural steps already completed should be repeated. In any case, the approach described in this Appendix will be used to the extent possible to conduct any analytical or procedural steps that have not been completed.

## 3. Setting Priorities for Rulemaking Activity

(a) *Priority-setting analysis and development of list of priorities.* At least once a year, the Department will prepare an analysis of each of the factors identified in paragraph (d) of this section based on existing literature, direct communications with interested parties and other experts, and other available information. The results of this analysis will be used to develop rulemaking priorities and proposed schedules for the development and issuance of all rulemakings. The DOE analysis, priorities and proposed rulemaking schedules will be documented and distributed for review and comment.

(b) *Public review and comment.* Each year, DOE will invite public input to review and comment on the priority analysis.

(c) *Issuance of final listing of rulemaking priorities.* Each fall, the Department will issue, simultaneously with the issuance of the Administration's Regulatory Agenda, a final set of rulemaking priorities, the accompanying analysis, and the schedules for all priority rulemakings that it anticipates within the next two years.

(d) *Factors for priority-setting.* The factors to be considered by DOE in developing priorities and establishing schedules for conducting rulemakings will include:

- (1) Potential energy savings.
- (2) Potential economic benefits.
- (3) Potential environmental or energy security benefits.
- (4) Applicable deadlines for rulemakings.
- (5) Incremental DOE resources required to complete rulemaking process.

- (6) Other relevant regulatory actions affecting products.
- (7) Stakeholder recommendations.
- (8) Evidence of energy efficiency gains in the market absent new or revised standards.
- (9) Status of required changes to test procedures.
- (10) Other relevant factors.

#### 4. Process for Developing Efficiency Standards and Factors to be Considered

This section describes the process to be used in developing efficiency standards and the factors to be considered in the process. The policies of the Department to guide the selection of standards and the decisions preliminary thereto are described in section 5.

(a) *Identifying and screening design options.* Once the Department has initiated a rulemaking for a specific product but before publishing an ANOPR, DOE will identify the product categories and design options to be analyzed in detail, and identify those design options eliminated from further consideration. Interested parties will be consulted to identify key issues, develop a list of design options, and to help the Department identify the expertise necessary to conduct the analysis.

(1) *Identification of issues for analysis.* The Department, in consultation with interested parties, will identify issues that will be examined in the standards development process.

(2) *Identification of experts and other interested parties for peer review.* DOE, in consultation with interested parties, will identify a group of independent experts and other interested parties who can provide expert review of the results of the engineering analysis and the subsequent impact analysis.

(3) *Identification and screening of design options.* In consultation with interested parties, the Department will develop a list of design options for consideration. Initially, the candidate design options will encompass all those technologies considered to be technologically feasible. Following the development of this initial list of design options, DOE will review each design option based on the factors described in paragraph (a)(4) of this section and the policies stated in section 5(b). The reasons for eliminating any design option at this stage of the process will be fully documented and published as part of the ANOPR. The technologically feasible design options that are not eliminated in this screening will be considered further in the Engineering Analysis described in paragraph (b) of this section.

(4) *Factors for screening of design options.* The factors for screening design options include:

(i) Technological feasibility. Technologies incorporated in commercial products or in working prototypes will be considered technologically feasible.

(ii) Practicability to manufacture, install and service. If mass production of a technology in commercial products and reliable installation and servicing of the technology could be achieved on the scale necessary to serve the relevant market at the time of the effective date of the standard, then that technology will be considered practicable to manufacture, install and service.

(iii) Adverse Impacts on Product Utility or Product Availability.

(iv) Adverse Impacts on Health or Safety.

(5) *Selection of contractors.* Using the specifications of necessary contractor expertise developed in consultation with interested parties, DOE will select appropriate contractors, subcontractors, and as necessary, expert consultants to perform the engineering analysis and the impact analysis.

(b) *Engineering analysis of design options and selection of candidate standard levels.* After design options are identified and screened, DOE will perform the engineering analysis and the benefit/cost analysis and select the candidate standard levels based on these analyses. The results of the analyses will be published in a Technical Support Document (TSD) to accompany the ANOPR.

(1) *Identification of engineering analytical methods and tools.* DOE, in consultation with outside experts, will select the specific engineering analysis tools (or multiple tools, if necessary to address uncertainty) to be used in the analysis of the design options identified as a result of the screening analysis.

(2) *Engineering and life-cycle cost analysis of design options.* The DOE and its contractor will perform engineering and life-cycle cost analyses of the design options.

(3) *Review by expert group and stakeholders.* The results of the engineering and life-cycle cost analyses will be distributed for review by experts and interested parties. If appropriate, a public workshop will be conducted to review these results. The analyses will be revised as appropriate on the basis of this input.

(4) *New information relating to the factors used for screening design options.* If further information or analysis leads to a determination that a design option, or a combination of design options, has unacceptable impacts based on the policies stated in section 5(b), that design option or combination of design options will not be included in a candidate standard level.

(5) *Selection of candidate standard levels.* Based on the results of the engineering and life-cycle cost analysis of design options and the policies stated in section 5(c), DOE will select the candidate standard levels for further analysis.

(c) *Advance Notice of Proposed Rulemaking—*  
(1) *Documentation of decisions on candidate standard selection.* (i) If the screening analysis indicates that continued development of a standard is appropriate, the Department



will publish an ANOPR in the FEDERAL REGISTER and will distribute a draft TSD containing the analyses performed to this point. The ANOPR will specify candidate standard levels but will not propose a particular standard. The ANOPR will also include the preliminary analysis of consumer life-cycle costs, national net present value, and energy impacts for the candidate standard levels based on the engineering analysis.

(i) If the preliminary analysis indicates that no candidate standard level is likely to meet the criteria specified in law, that conclusion will be announced. In such cases, the Department may decide to proceed with a rulemaking that proposes not to adopt new or amended standards, or it may suspend the rulemaking and conclude that further action on such standards should be assigned a low priority under section 3.

(2) *Public comment and hearing.* There will be 75 days for public comment on the ANOPR with at least one public hearing or workshop.

(3) *Revisions based on comments.* Based on consideration of the comments received, any necessary changes to the engineering analysis or the candidate standard levels will be made.

If major changes are required at this stage, interested parties and experts will be given an opportunity to review the revised analysis.

(d) *Analysis of impacts and selection of proposed standard level.* After the ANOPR, economic analyses of the impacts of the candidate standard levels will be conducted. The Department will propose updated standards based on the results of the impact analysis.

(1) *Identification of issues for analysis.* The Department, in consultation with interested parties, will identify issues that will be examined in the impacts analysis.

(2) *Identification of analytical methods and tools.* DOE, in consultation with outside experts, will select the specific economic analysis tools (or multiple tools if necessary to address uncertainty) to be used in the analysis of the candidate standard levels.

(3) *Analysis of impacts.* DOE will conduct the analysis of the impacts of candidate standard levels including analysis of the factors described in paragraphs (d)(7)(ii)-(viii) of this section.

(4) *Review by expert group and stakeholders.* The results of the analysis of impacts will be distributed for review by experts and interested parties. If appropriate, a public workshop will be conducted to review these results. The analysis will be revised as appropriate on the basis of this input.

(5) *Efforts to develop consensus among stakeholders.* If a representative group of interested parties undertakes to develop joint recommendations to the Department on standards, DOE will consider deferring its impact analysis until these discussions are

completed or until participants in the efforts indicate that they are unable to reach a timely agreement.

(6) *Selection of proposed standard level based on analysis of impacts.* On the basis of the analysis of the factors described in paragraph (d)(7) of this section and the policies stated in section 5(e), DOE will select a proposed standard level.

(7) *Factors to be considered in selecting a proposed standard.* The factors to be considered in selection of a proposed standard include:

(i) Consensus stakeholder recommendations.

(ii) Impacts on manufacturers. The analysis of manufacturer impacts will include: Estimated impacts on cash flow; assessment of impacts on manufacturers of specific categories of products and small manufacturers; assessment of impacts on manufacturers of multiple product-specific Federal regulatory requirements, including efficiency standards for other products and regulations of other agencies; and impact on manufacturing capacity, plant closures, and loss of capital investment.

(iii) Impacts on consumers. The analysis of consumer impacts will include: Estimated impacts on consumers based on national average energy prices and energy usage; assessments of impacts on subgroups of consumers based on major regional differences in usage or energy prices and significant variations in installation costs or performance; sensitivity analyses using high and low discount rates and high and low energy price forecasts; consideration of changes to product utility and other impacts of likely concern to all or some consumers, based to the extent practicable on direct input from consumers; estimated life-cycle cost with sensitivity analysis; and consideration of the increased first cost to consumers and the time required for energy cost savings to pay back these first costs.

(iv) Impacts on competition.

(v) Impacts on utilities. The analysis of utility impacts will include estimated marginal impacts on electric and gas utility costs and revenues.

(vi) National energy, economic and employment impacts. The analysis of national energy, economic and employment impacts will include: Estimated energy savings by fuel type; estimated net present value of benefits to all consumers; and estimates of the direct and indirect impacts on employment by appliance manufacturers, relevant service industries, energy suppliers and the economy in general.

(vii) Impacts on the environment and energy security. The analysis of environmental and energy security impacts will include estimated impacts on emissions of carbon and relevant criteria pollutants, impacts on pollution control costs, and impacts on oil use.

(viii) Impacts of non-regulatory approaches. The analysis of energy savings and consumer impacts will incorporate an assessment of the impacts of market forces and existing voluntary programs in promoting product efficiency, usage and related characteristics in the absence of updated efficiency standards.

(ix) New information relating to the factors used for screening design options.

(e) *Notice of Proposed Rulemaking—(1) Documentation of decisions on proposed standard selection.* The Department will publish a NOPR in the FEDERAL REGISTER that proposes standard levels and explains the basis for the selection of those proposed levels, and will distribute a draft TSD documenting the analysis of impacts. As required by §325(p)(2) of EPCA, the NOPR also will describe the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible and, if the proposed standards would not achieve these levels, the reasons for proposing different standards.

(2) *Public comment and hearing.* There will be 75 days for public comment on the NOPR, with at least one public hearing or workshop.

(3) *Revisions to impact analyses and selection of final standard.* Based on the public comments received and the policies stated in section 5(f), DOE will review the proposed standard and impact analyses, and make modifications as necessary. If major changes to the analyses are required at this stage, interested parties and experts will be given an opportunity to review the revised analyses.

(f) *Notice of Final Rulemaking.* The Department will publish a Notice of Final Rulemaking in the FEDERAL REGISTER that promulgates standard levels and explains the basis for the selection of those standards, accompanied by a final TSD.

##### 5. Policies on Selection of Standards.

(a) *Purpose.* (1) Section 4 describes the process that will be used to consider new or revised energy efficiency standards and lists a number of factors and analyses that will be considered at specified points in the process. Department policies concerning the selection of new or revised standards, and decisions preliminary thereto, are described in this section.

These policies are intended to elaborate on the statutory criteria provided in section 325 of the EPCA, 42 U.S.C. 6295.

(2) The policies described below are intended to provide guidance for making the determinations required by EPCA. This statement of policy is not intended to preclude consideration of any information pertinent to the statutory criteria. The Department will consider all pertinent information in determining whether a new or revised standard is consistent with the statutory criteria. Moreover, the Department will not

be guided by a policy in this section if, in the particular circumstances presented, such a policy would lead to a result inconsistent with the criteria in section 325 of EPCA.

(b) *Screening design options.* Section 4(a)(4) lists factors to be considered in screening design options. These factors will be considered as follows in determining whether a design option will receive any further consideration:

(1) *Technological feasibility.* Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) *Practicability to manufacture, install and service.* If it is determined that mass production of a technology in commercial products and reliable installation and servicing of the technology could not be achieved on the scale necessary to serve the relevant market at the time of the effective date of the standard, then that technology will not be considered further.

(3) *Impacts on product utility to consumers.* If a technology is determined to have significant adverse impact on the utility of the product to significant subgroups of consumers, or result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the U.S. at the time, it will not be considered further.

(4) *Safety of technologies.* If it is determined that a technology will have significant adverse impacts on health or safety, it will not be considered further.

(c) *Identification of candidate standard levels.* Based on the results of the engineering and cost and benefit analyses of design options, DOE will identify the candidate standard levels for further analysis. Candidate standard levels will be selected as follows:

(1) *Costs and savings of design options.* Design options which have payback periods that exceed the average life of the product or which cause life-cycle cost increases relative to the base case, using typical fuel costs, usage and discount rates, will not be used as the basis for candidate standard levels.

(2) *Further information on factors used for screening design options.* If further information or analysis leads to a determination that a design option, or a combination of design options, has unacceptable impacts under the policies stated in paragraph (b) of this section, that design option or combination of design options will not be included in a candidate standard level.

(3) *Selection of candidate standard levels.* Candidate standard levels, which will be identified in the ANOPR and on which impact analyses will be conducted, will be based on the remaining design options.

(i) The range of candidate standard levels will typically include:

(A) The most energy efficient combination of design options;

(B) The combination of design options with the lowest life-cycle cost; and

(C) A combination of design options with a payback period of not more than three years.

(i) Candidate standard levels that incorporate noteworthy technologies or fill in large gaps between efficiency levels of other candidate standard levels also may be selected.

(d) *Advance notice of proposed rulemaking.* New information provided in public comments on the ANOPR will be considered to determine whether any changes to the candidate standard levels are needed before proceeding to the analysis of impacts. This review, and any appropriate adjustments, will be based on the policies in paragraph (c) of this section.

(e) *Selection of proposed standard.* Based on the results of the analysis of impacts, DOE will select a standard level to be proposed for public comment in the NOPR. Section 4(d)(7) lists the factors to be considered in selecting a proposed standard level. Section 325(o)(2)(A) of EPCA provides that any new or revised standard must be designed to achieve the maximum improvement in energy efficiency that is determined to be technologically feasible and economically justified.

(1) *Statutory policies.* The fundamental policies concerning selection of standards are established in the EPCA, including the following:

(i) A candidate standard level will not be proposed or promulgated if the Department determines that it is not technologically feasible and economically justified. See EPCA section 325(o)(3)(B). A standard level is economically justified if the benefits exceed the burdens. See EPCA section 325(o)(2)(B)(i). A standard level is rebuttably presumed to be economically justified if the payback period is three years or less. See EPCA section 325(o)(2)(B)(iii).

(ii) If the Department determines that a standard level is likely to result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the U.S. at the time, that standard level will not be proposed. See EPCA section 325(o)(4).

(iii) If the Department determines that a standard level would not result in significant conservation of energy, that standard level will not be proposed. See EPCA section 325(o)(3)(B).

(2) *Selection of proposed standard on the basis of consensus stakeholder recommendations.* Development of consensus proposals for new or revised standards is an effective mechanism for balancing the economic, energy, and environmental interests affected by standards.

Thus, notwithstanding any other policy on selection of proposed standards, a consensus recommendation on an updated efficiency level submitted by a group that represents all interested parties will be proposed by the Department if it is determined to meet the statutory criteria.

(3) *Considerations in assessing economic justification.*

(i) The following policies will guide the application of the economic justification criterion in selecting a proposed standard:

(A) If the Department determines that a candidate standard level would result in a negative return on investment for the industry, would significantly reduce the value of the industry, or would cause significant adverse impacts to a significant subgroup of manufacturers (including small manufacturing businesses), that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(B) If the Department determines that a candidate standard level would be the direct cause of plant closures, significant losses in domestic manufacturer employment, or significant losses of capital investment by domestic manufacturers, that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(C) If the Department determines that a candidate standard level would have a significant adverse impact on the environment or energy security, that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(D) If the Department determines that a candidate standard level would not result in significant energy conservation relative to non-regulatory approaches, that standard level will be presumed not to be economically justified unless the Department determines that other specifically identified expected benefits of the standard would outweigh the expected adverse effects.

(E) If the Department determines that a candidate standard level is not consistent with the policies relating to practicability to manufacture, consumer utility, or safety in paragraphs (b) (2), (3) and (4) of this section, that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(F) If the Department determines that a candidate standard level is not consistent

with the policies relating to consumer costs in paragraph (c)(1) of this section, that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(G) If the Department determines that a candidate standard level will have significant adverse impacts on a significant subgroup of consumers (including low-income consumers), that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(H) If the Department or the Department of Justice determines that a candidate standard level would have significant anti-competitive effects, that standard level will be presumed not to be economically justified unless the Department determines that specifically identified expected benefits of the standard would outweigh this and any other expected adverse effects.

(i) The basis for a determination that triggers any presumption in paragraph (e)(3)(i) of this section and the basis for a determination that an applicable presumption has been rebutted will be supported by substantial evidence in the record and the evidence and rationale for making these determinations will be explained in the NOPR.

(iii) If none of the policies in paragraph (e)(3)(i) of this section is found to be dispositive, the Department will determine whether the benefits of a candidate standard level exceed the burdens considering all the pertinent information in the record.

(f) *Selection of a final standard.* New information provided in the public comments on the NOPR and any analysis by the Department of Justice concerning impacts on competition of the proposed standard will be considered to determine whether any change to the proposed standard level is needed before proceeding to the final rule. The same policies used to select the proposed standard level, as described in section 5(e) above, will be used to guide the selection of the final standard level.

#### 6. Effective Date of a Standard

The effective date for new or revised standards will be established so that the period between the publication of the final rule and the effective date is not less than any period between the dates for publication and effective date provided for in EPCA. The effective date of any revised standard will be established so that the period between the effective date of the prior standard and the effective date of such revised standard is not less than period between the two effective dates provided for in EPCA.

#### 7. Test Procedures

(a) *Identifying the need to modify test procedures.* DOE, in consultation with interested parties, experts, and the National Institute of Standards and Technology, will attempt to identify any necessary modifications to established test procedures when initiating the standards development process.

(b) *Developing and proposing revised test procedures.* Needed modifications to test procedures will be identified in consultation with experts and interested parties early in the screening stage of the standards development process. Any necessary modifications will be proposed before issuance of an ANOPR in the standards development process.

(c) *Issuing final test procedure modification.* Final, modified test procedures will be issued prior to the NOPR on proposed standards.

(d) *Effective date of modified test procedures.* If required only for the evaluation and issuance of updated efficiency standards, modified test procedures typically will not go into effect until the effective date of updated standards.

#### 8. Joint Stakeholder Recommendations

(a) *Joint recommendations.* Consensus recommendations, and supporting analyses, submitted by a representative group of interested parties will be given substantial weight by DOE in the development of a proposed rule. See section 5(e)(2). If the supporting analyses provided by the group addresses all of the statutory criteria and uses valid economic assumptions and analytical methods, DOE expects to use this supporting analyses as the basis of a proposed rule. The proposed rule will explain any deviations from the consensus recommendations from interested parties.

(b) *Breadth of participation.* Joint recommendations will be of most value to the Department if the participants are reasonably representative of those interested in the outcome of the standards development process, including manufacturers, consumers, utilities, states and representatives of environmental or energy efficiency interest groups.

(c) *DOE support of consensus development, including impact analyses.* In order to facilitate such consensus development, DOE will make available, upon request, appropriate technical and legal support to the group and will provide copies of all relevant public documents and analyses. The Department also will consider any requests for its active participation in such discussions, recognizing that the procedural requirements of the Federal Advisory Committee Act may apply to such participation.

9. *Principles for the Conduct of Engineering Analysis*

(a) The purpose of the engineering analysis is to develop the relationship between efficiency and cost of the subject product. The Department will use the most appropriate means available to determine the efficiency/cost relationship, including an overall system approach or engineering modeling to predict the improvement in efficiency that can be expected from individual design options as discussed in the paragraphs below. From this efficiency/cost relationship, measures such as payback, life cycle cost, and energy savings can be developed. The Department, in consultation with interested parties, will identify issues that will be examined in the engineering analysis and the types of specialized expertise that may be required. With these specifications, DOE will select appropriate contractors, subcontractors, and expert consultants, as necessary, to perform the engineering analysis and the impact analysis. Also, the Department will consider data, information and analyses received from interested parties for use in the analysis wherever feasible.

(b) The engineering analysis begins with the list of design options developed in consultation with the interested parties as a result of the screening process. In consultation with the technology/industry expert peer review group, the Department will establish the likely cost and performance improvement of each design option. Ranges and uncertainties of cost and performance will be established, although efforts will be made to minimize uncertainties by using measures such as test data or component or material supplier information where available. Estimated uncertainties will be carried forward in subsequent analyses. The use of quantitative models will be supplemented by qualitative assessments as appropriate.

(c) The next step includes identifying, modifying or developing any engineering models necessary to predict the efficiency impact of any one or combination of design options on the product. A base case configuration or starting point will be established as well as the order and combination/blending of the design options to be evaluated. The DOE, utilizing expert consultants, will then perform the engineering analysis and develop the cost efficiency curve for the product. The cost efficiency curve and any necessary models will be subject to peer review before being issued with the ANOPR.

10. *Principles for the Analysis of Impacts on Manufacturers*

(a) *Purpose.* The purpose of the manufacturer analysis is to identify the likely impacts of efficiency standards on manufacturers. The Department will analyze the impact of standards on manufacturers with substan-

tial input from manufacturers and other interested parties. The use of quantitative models will be supplemented by qualitative assessments by industry experts. This section describes the principles that will be used in conducting future manufacturing impact analysis.

(b) *Issue identification.* In the impact analysis stage (section 4(d)), the Department, in consultation with interested parties, will identify issues that will require greater consideration in the detailed manufacturer impact analysis. Possible issues may include identification of specific types or groups of manufacturers and concerns over access to technology. Specialized contractor expertise, empirical data requirements, and analytical tools required to perform the manufacturer impact analysis also would be identified at this stage.

(c) *Industry characterization.* Prior to initiating detailed impact studies, the Department will seek input on the present and past industry structure and market characteristics. Input on the following issues will be sought:

- (1) Manufacturers and their relative market shares;
- (2) Manufacturer characteristics, such as whether manufacturers make a full line of models or serve a niche market;
- (3) Trends in the number of manufacturers;
- (4) Financial situation of manufacturers;
- (5) Trends in product characteristics and retail markets; and
- (6) Identification of other relevant regulatory actions and a description of the nature and timing of any likely impacts.

(d) *Cost impacts on manufacturers.* The costs of labor, material, engineering, tooling, and capital are difficult to estimate, manufacturer-specific, and usually proprietary. The Department will seek input from interested parties on the treatment of cost issues. Manufacturers will be encouraged to offer suggestions as to possible sources of data and appropriate data collection methodologies. Costing issues to be addressed include:

- (1) Estimates of total cost impacts, including product-specific costs (based on cost impacts estimated for the engineering analysis) and front-end investment/conversion costs for the full range of product models.
- (2) Range of uncertainties in estimates of average cost, considering alternative designs and technologies which may vary cost impacts and changes in costs of material, labor and other inputs which may vary costs.
- (3) Variable cost impacts on particular types of manufacturers, considering factors such as atypical sunk costs or characteristics of specific models which may increase or decrease costs.

(e) *Impacts on product sales, features, prices and cost recovery.* In order to make manufacturer cash flow calculations, it is necessary to predict the number of products sold and

their sale price. This requires an assessment of the likely impacts of price changes on the number of products sold and on typical features of models sold. Past analyses have relied on price and shipment data generated by economic models. The Department will develop additional estimates of prices and shipments by drawing on multiple sources of data and experience including: actual shipment and pricing experience, data from manufacturers, retailers and other market experts, financial models, and sensitivity analyses. The possible impacts of candidate standard levels on consumer choices among competing fuels will be explicitly considered where relevant.

(f) *Measures of impact.* The manufacturer impact analysis will estimate the impacts of candidate standard levels on the net cash flow of manufacturers. Computations will be performed for the industry as a whole and for typical and atypical manufacturers. The exact nature and the process by which the analysis will be conducted will be determined by DOE, in conjunction with interested parties. Impacts to be analyzed include:

- (1) Industry net present value, with sensitivity analyses based on uncertainty of costs, sales prices and sales volumes;
- (2) Cash flows, by year;
- (3) Other measures of impact, such as revenue, net income and return on equity, as appropriate;

The characteristics of atypical manufacturers worthy of special consideration will be determined in consultation with manufacturers and other interested parties and may include: manufacturers incurring higher or lower than average costs; and manufacturers experiencing greater or fewer adverse impacts on sales. Alternative scenarios based on other methods of estimating cost or sales impacts also will be performed, as needed.

(g) *Cumulative impacts of other Federal regulatory actions.* (1) The Department will recognize and seek to mitigate the overlapping effects on manufacturers of new or revised DOE standards and other regulatory actions affecting the same products. DOE will analyze and consider the impact on manufacturers of multiple product-specific regulatory actions. These factors will be considered in setting rulemaking priorities, assessing manufacturer impacts of a particular standard, and establishing the effective date for a new or revised standard. In particular, DOE will seek to propose effective dates for new or revised standards that are appropriately coordinated with other regulatory actions to mitigate any cumulative burden.

(2) If the Department determines that a proposed standard would impose a significant impact on product manufacturers within three years of the effective date of another DOE standard that imposes significant impacts on the same manufacturers (or divi-

sions thereof, as appropriate), the Department will, in addition to evaluating the impact on manufacturers of the proposed standard, assess the joint impacts of both standards on manufacturers.

(3) If the Department is directed to establish or revise standards for products that are components of other products subject to standards, the Department will consider the interaction between such standards in setting rulemaking priorities and assessing manufacturer impacts of a particular standard. The Department will assess, as part of the engineering and impact analyses, the cost of components subject to efficiency standards.

(h) *Summary of quantitative and qualitative assessments.* The summary of quantitative and qualitative assessments will contain a description and discussion of uncertainties. Alternative estimates of impacts, resulting from the different potential scenarios developed throughout the analysis, will be explicitly presented in the final analysis results.

(i) *Key modeling and analytical tools.* In its assessment of the likely impacts of standards on manufacturers, the Department will use models which are clear and understandable, feature accessible calculations, and have assumptions that are clearly explained. As a starting point, the Department will use the Government Regulatory Impact Model (GRIM). The Department will consider any enhancements to the GRIM that are suggested by interested parties. If changes are made to the GRIM methodology, DOE will provide notice and seek public input. The Department will also support the development of economic models for price and volume forecasting. Research required to update key economic data will be considered.

#### 11. Principles for the Analysis of Impacts on Consumers

(a) *Early consideration of impacts on consumer utility.* The Department will consider at the earliest stages of the development of a standard whether particular design options will lessen the utility of the covered products to the consumer. See section 4(a).

(b) *Impacts on product availability.* The Department will determine, based on consideration of information submitted during the standard development process, whether a proposed standard is likely to result in the unavailability of any covered product type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as products generally available in the U.S. at the time. DOE will not promulgate a standard if it concludes that it would result in such unavailability.

(c) *Department of justice review.* As required by law, the Department will solicit the views of the Justice Department on any lessening of competition that is likely to result from

the imposition of a proposed standard and will give the views provided full consideration in assessing economic justification of a proposed standard. In addition, DOE may consult with the Department of Justice at earlier stages in the standards development process to seek to obtain preliminary views on competitive impacts.

(d) *Variation in consumer impacts.* The Department will use regional analysis and sensitivity analysis tools, as appropriate, to evaluate the potential distribution of impacts of candidate standards levels among different subgroups of consumers. The Department will consider impacts on significant segments of consumers in determining standards levels. Where there are significant negative impacts on identifiable subgroups, DOE will consider the efficacy of voluntary approaches as a means to achieve potential energy savings.

(e) *Payback period and first cost.* (1) In the assessment of consumer impacts of standards, the Department will consider Life-Cycle Cost, Payback Period and Cost of Conserved Energy to evaluate the savings in operating expenses relative to increases in purchase price. The Department intends to increase the level of sensitivity analysis and scenario analysis for future rulemakings. The results of these analyses will be carried throughout the analysis and the ensuing uncertainty described.

(2) If, in the analysis of consumer impacts, the Department determines that a candidate standard level would result in a substantial increase in the product first costs to consumers or would not pay back such additional first costs through energy cost savings in less than three years, Department will specifically assess the likely impacts of such a standard on low-income households, product sales and fuel switching.

#### 12. Consideration of Non-Regulatory Approaches

(a) The Department recognizes that voluntary or other non-regulatory efforts by manufacturers, utilities and other interested parties can result in substantial efficiency improvements. The Department intends to consider fully the likely effects of non-regulatory initiatives on product energy use, consumer utility and life cycle costs, manufacturers, competition, utilities and the environment, as well as the distribution of these impacts among different regions, consumers, manufacturers and utilities. DOE will attempt to base its assessment on the actual impacts of such initiatives to date, but also will consider information presented regarding the impacts that any existing initiative might have in the future. Such information is likely to include a demonstration of the strong commitment of manufacturers, distribution channels, utilities or others to such voluntary efficiency improvements.

This information will be used in assessing the likely incremental impacts of establishing or revising standards, in assessing appropriate effective dates for new or revised standards and in considering DOE support of non-regulatory initiatives.

(b) DOE believes that non-regulatory approaches are valuable complements to the standards program. In particular, DOE will consider pursuing voluntary programs where it appears that highly efficient products can obtain a significant market share but less efficient products cannot be eliminated altogether because, for instance, of unacceptable adverse impacts on a significant subgroup of consumers. In making this assessment, the Department will consider the success more efficient designs have had in the market, their acceptance to date, and their potential market penetration.

#### 13. Crosscutting Analytical Assumptions

In selecting values for certain crosscutting analytical assumptions, DOE expects to continue relying upon the following sources and general principles:

(a) *Underlying economic assumptions.* The appliance standards analyses will generally use the same economic growth and development assumptions that underlie the most current Annual Energy Outlook (AEO) published by the Energy Information Administration (EIA).

(b) *Energy price and demand trends.* Analyses of the likely impact of appliance standards on typical users will generally adopt the mid-range energy price and demand scenario of the EIA's most current AEO. The sensitivity of such estimated impacts to possible variations in future energy prices are likely to be examined using the EIA's high and low energy price scenarios.

(c) *Product-specific energy-efficiency trends, without updated standards.* Product specific energy-efficiency trends will be based on a combination of the efficiency trends forecast by the EIA's residential and commercial demand model of the National Energy Modeling System (NEMS) and product-specific assessments by DOE and its contractors with input from interested parties.

(d) *Discount rates.* For residential and commercial consumers, ranges of three different real discount rates will be used. For residential consumers, the mid-range discount rate will represent DOE's approximation of the average financing cost (or opportunity costs of reduced savings) experienced by typical consumers. Sensitivity analyses will be performed using discount rates reflecting the costs more likely to be experienced by residential consumers with little or no savings and credit card financing and consumers with substantial savings. For commercial users, a mid-range discount rate reflecting the DOE's approximation of the average real rate of return on commercial investment

will be used, with sensitivity analyses being performed using values indicative of the range of real rates of return likely to be experienced by typical commercial businesses. For national net present value calculations, DOE would use the Administration's approximation of the average real rate of return on private investment in the U.S. economy. For manufacturer impacts, DOE plans to use a range of real discount rates which are representative of the real rates of return experienced by typical U.S. manufacturers affected by the program.

(e) *Environmental impacts.* The emission rates of carbon, sulfur oxides and nitrogen oxides used by DOE to calculate the physical quantities of emissions likely to be avoided by candidate standard levels will be based on the current average carbon emissions of the U.S. electric utilities and on the projected rates of emissions of sulfur and nitrogen oxides. Projected rates of emissions, if available, will be used for the estimation of any other environmental impacts. The Department will consider the effects of the proposed standards on these emissions in reaching a decision about whether the benefits of the proposed standards exceed their burdens but will not determine the monetary value of these environmental externalities.

*14. Deviations, Revisions, and Judicial Review*

(a) *Deviations.* This Appendix specifies procedures, interpretations and policies for the development of new or revised energy efficiency standards in considerable detail. As the approach described in this Appendix is applied to the development of particular standards, the Department may find it necessary or appropriate to deviate from these procedures, interpretations or policies. If the Department concludes that such deviations are necessary or appropriate in a particular situation, DOE will provide interested parties with notice of the deviation and an explanation.

(b) *Revisions.* If the Department concludes that changes to the procedures, interpretations or policies in this Appendix are necessary or appropriate, DOE will provide notice in the FEDERAL REGISTER of modifications to this Appendix with an accompanying explanation. DOE expects to consult with interested parties prior to any such modification.

(c) *Judicial review.* The procedures, interpretations, and policies stated in this Appendix are not intended to establish any new cause of action or right to judicial review.

[61 FR 36981, July 15, 1996]

**Subpart D—Petitions To Exempt State Regulation From Preemption; Petitions To Withdraw Exemption of State Regulation**

SOURCE: 54 FR 6078, Feb. 7, 1989, unless otherwise noted.

**§ 430.40 Purpose and scope.**

(a) This subpart prescribes the procedures to be followed in connection with petitions requesting a rule that a State regulation prescribing an energy conservation standard, water conservation standard (in the case of faucets, showerheads, water closets, and urinals), or other requirement respecting energy efficiency, energy use, or water use (in the case of faucets, showerheads, water closets, and urinals) of a type (or class) of covered product not be preempted.

(b) This subpart also prescribes the procedures to be followed in connection with petitions to withdraw a rule exempting a State regulation prescribing an energy conservation standard, water conservation standard (in the case of faucets, showerheads, water closets, and urinals), or other requirement respecting energy efficiency, energy use, or water use (in the case of faucets, showerheads, water closets, and urinals) of a type (or class) of covered product.

[63 FR 13318, Mar. 18, 1998]

**§ 430.41 Prescriptions of a rule.**

(a) *Criteria for exemption from preemption.* Upon petition by a State which has prescribed an energy conservation standard, water conservation standard (in the case of faucets, showerheads, water closets, and urinals), or other requirement for a type or class of covered equipment for which a Federal energy conservation standard or water conservation standard is applicable, the Secretary shall prescribe a rule that such standard not be preempted if he determines that the State has established by a preponderance of evidence that such requirement is needed to meet unusual and compelling State or local energy interests or water interests. For the purposes of this section, the term "unusual and compelling