California Energy Commission

PROPOSED AMENDMENTS TO APPLIANCE EFFICIENCY REGULATIONS

CALIFORNIA CODE OF REGULATIONS TITLE 20, SECTIONS 1601 THROUGH 1608

2015 Appliance Efficiency Rulemaking for HVAC Air Filters, Fluorescent Dimming Ballasts, Heat Pump Water Chilling Packages, and Federal Updates

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Edmund G. Brown Jr., Governor

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Proposed State Regulations and Federal Updates

Proposed 15 day language appears as double underline (example) and proposed deletions appear as double strikeout (~~example~~). Existing language appears as plain text. Three dots or "…" represents the substance of the regulations that exists between the proposed language and current language.

Section 1601. Scope.

…

(c) Central air conditioners, which are electrically-powered unitary air conditioners and electrically-powered unitary heat pumps, except those designed to operate without a fan; and gas-fired air conditioners and gas-fired heat pumps, air filters for residential buildings for use in forced-air heating or forced air cooling equipment, and heat pump water-chilling packages.

…

(d) Spot air conditioners, evaporative coolers, residential furnace fans, ceiling fans, ceiling fan light kits, whole house fans, residential exhaust fans, and dehumidifiers.

…

(j) Fluorescent Lamp Ballasts and deep-dimming fluorescent lamp ballasts that are designed to:

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c), 25402.5.4 and 25960, Public Resources Code

Section 1602. Definitions.

...

(a) General.

"Basic model" of a federally regulated residential furnace fan, as defined in 10 C.F.R. section 430.2, means all units of a given type of residential furnace fan (or class thereof) manufactured by one manufacturer, having the same primary energy source, and which have essentially identical electrical, physical, and functional (or hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption, or water efficiency; and that are marketed and/or designed to be installed in the same type of installation.

...

(b) Refrigerators, Refrigerators-Freezers, and Freezers

"Adjusted total volume" means the sum of (i) the fresh food compartment volume as defined in 10 C.F.R. part 430, Appendix A to Subpart B ~~or 10 C.F.R. part 430, Appendix A1 to Subpart B~~in cubic feet, and (ii) the product of an adjustment factor and the net freezer compartment volume as defined in 10 C.F.R., part 430, Appendix A to Subpart B or 10 C.F.R. part 430, ~~Appendix A1 to Subpart B~~in cubic feet.

...

"Anti-sweat heater" means a device incorporated into the design of a refrigerator or refrigerator-freezer to prevent the accumulation of moisture on exterior surfaces of the cabinet as defined in 10 C.F.R. part 430~~under conditions of high ambient humidity~~.

...

"Closed solid" means commercial refrigeration equipment with doors, and in which more than 75 percent of the outer surface area of all doors on a unit are not transparent.

"Closed transparent" means commercial refrigeration equipment with doors, and in which 25 percent or more of the outer surface area of all doors on the unit are transparent.

...

"Commercial hybrid refrigerator, freezer, and refrigerator-freezer" means a commercial refrigerator, freezer, or refrigerator-freezer that ~~has~~ consists of two or more thermally separated refrigeration ~~chilled and/or frozen~~ compartments ~~that are~~:

(1) that are in two or more different equipment families;
(2) ~~contained in one cabinet; and~~
~~(3)~~ and that is sold as a single unit

…

"Compact refrigerator-freezer" means a refrigerator-freezer that has total volume less than 7.75 ft^3:
~~(1) rated volume, as determined using 10 C.F.R. part 430, Appendix A1 of Subpart B and that is manufactured before September 15, 2014;~~
~~(2)~~ as determined using 10 C.F.R. part 430, Appendix A of Subpart B ~~and that is manufactured on or after September 15, 2014~~.

…

"Display door" means a door that:

(1) Is designed for product display; or
(2) Has 75 percent or more of its surface area composed of glass or another transparent material.

"Door" means a movable panel that separates the interior volume of a unit of commercial refrigeration equipment from the ambient environment and is designed to facilitate access to the refrigerated space for the purpose of loading and unloading product. This includes hinged doors, sliding doors, and drawers. This does not include night curtains.

…

"Freezer volume" means net freezer compartment volume as defined in "adjusted total volume" definition found in 10 C.F.R, part 430, Appendix B to Subpart B ~~or 10 C.F.R. part 430, Appendix B1 to Subpart B~~.

…

"Freight door" means a door that is not a display door and is equal to or larger than 4 feet wide and 8 feet tall.

…

"Ice-cream freezer" means a commercial freezer that is designed to operate at or below −5°F (±2°F) (−21°C ± 1.1°C) ~~5°F (21°C)~~ and that the manufacturer designs, markets, or intends for the storing, displaying, or dispensing of ice cream.

…

"Operating temperature" means the range of integrated average temperatures at which a self-contained commercial refrigeration unit or remote-condensing commercial refrigeration unit with a thermostat is capable of operating or, in the case of a remote-condensing commercial refrigeration unit without a thermostat, the range of integrated average temperatures at which the unit is marketed, designed, or intended to operate.

…

"Passage door" means a door that is not a freight or display door.

...

"Rating temperature" means the integrated average temperature a unit must maintain during testing (i.e., either as listed in tables A-4, A-5, or A-6 of this Article or the lowest application product temperature).

...

"Service over counter" means equipment that has sliding or hinged doors in the back intended for use by sales personnel, with glass or other transparent material in the front for displaying merchandise, and that has a height not greater than 66 inches and is intended to serve as a counter for transactions between sales personnel and customers. "Service over the counter, self-contained, medium temperature commercial refrigerator", also defined in this section, is one specific equipment class within the service over counter equipment family).

"Service over the counter, self-contained, medium temperature commercial refrigerator" means a commercial refrigerator—

(1) That operates at temperatures at or above 32 °F;
(2) With a self-contained condensing unit;
(3) Equipped with sliding or hinged doors in the back intended for use by sales personnel, and with glass or other transparent material in the front for displaying merchandise; and
(4) That has a height not greater than 66 inches and is intended to serve as a counter for transactions between sales personnel and customers.

...

"Transparent" means greater than or equal to 45 percent light transmittance, as determined in accordance with the ASTM Standard E 1084-86 (Reapproved 2009), at normal incidence and in the intended direction of viewing.

...

(c) Air Conditioners, Air Filters, and Heat Pump Water-Chilling Packages.

"Air filter" means an air-cleaning device installed in forced-air heating or cooling equipment and used for removing particulate matter from the air.

"Air filter media" means the part of the air filter that conducts the actual removal of particulates.

"Air filter depth" means air filter thickness dimension measured perpendicular to the Face Area plane, expressed in inches.

"Airflow rate" means the actual volume of air passing through the device per unit of time, expressed in cubic-feet-per-minute, to three significant figures.

...

"Dust holding capacity" means the total weight of the synthetic loading dust captured by the filter device over all of the incremental dust loading steps of the test ~~amount of dust captured on the air filter. Dust holding capacity shall be established at the maximum rated airflow rate, as published by the manufacturer~~.

...

"Face area" means the gross area of the air filter exposed to airflow, as measured in a plane perpendicular to the direction of the airflow approaching the air filter (air filter length multiplied by air filter width), expressed in square-feet.

"Face velocity" means the rate of air movement at the face of the air filter (airflow rate divided by face area) expressed in feet-per-minute.

"Final resistance" means the resistance to airflow of the air filter operating at the point where the test is terminated and results determined.

...

"Heat-pump water-chilling package" means a factory-made package of one or more compressors, condensers, and evaporators designed for the purpose of heating water. Where such equipment is provided in one or more than one assembly, the separate assemblies are designed to be used together. The package is specifically designed to make use of the refrigerant cycle to remove heat from an air or water source and to reject the heat to water for heating use. This unit may include valves to allow for reverse-cycle (cooling) operation.

...

"Initial resistance" means the resistance of the air filter operating at its rated airflow rate, as published by the manufacturer, with no dust load.

...

"Maximum rated airflow rate" means the highest airflow rate at which the air filter is operated, as published by the manufacturer.

"Minimum efficiency reporting value (MERV)" means the composite particle efficiency metric defined in ASHRAE 52.2-2012.

…

"Particle size" means the polystyrene latex (PSL) light-scattering equivalent size of particulate matter as expressed as a diameter in micrometers (μm).

"Particle size efficiency" means the fraction (percentage) of particles that are captured on the air filter. Particle size efficiency is measured in three particle size ranges: 0.3-1.0, 1.0-3.0, 3.0-10 micrometers (μm). Particle size efficiency ~~ratings are~~ abbreviated as "PSE~~R~~" in the required labels for air filters.

"Pressure drop" also known as "particle size removal efficiency" means the drop in static pressure versus air flow rate across air filter media in the forced-air heating or cooling equipment.

…

(f) Water Heaters.

~~"Energy factor" of a water heater means a measure of overall water heater efficiency, as determined using the applicable test method in Section 1604(f).~~

…

Uniform Energy Factor means the measure of water heater overall efficiency.

…

(j) Fluorescent Lamp Ballasts and Deep-Dimming Fluorescent Lamp Ballasts.

"Arc power" means the entire output power of the ballast and delivered to all attached lamps.

…

"Deep-dimming fluorescent lamp ballast" means a fluorescent ballast that is capable of operating lamps in dimmed operating modes at any number of levels at or below 50 percent of full output. The term shall only apply to lamp ballasts designed to operate one, two, three, or four T5 or T8 four-foot linear or U~~u~~-shape fluorescent lamps.

…

"Input power" means the power provided to the ballast, typically line alternating-current power as determined by section 2.5.1.6 of amended Appendix Q.

…

"Maximum arc power" means the maximum amount of power a dimming ballast will provide to lamps under normal operating conditions. It is the same power as the measured power at 100 percent arc power.

…

"Weighted Ballast Luminous Efficacy" means the weighted average ballast luminous efficacy as calculated in section 1604(j)(3)(D).

…

(k) Lamps.

"R20 short lamp" means a lamp that is an R20 incandescent reflector lamp that has a rated wattage of 100 watts; has a maximum overall length of 3 and 5/8, or 3.625, inches; and is designed, labeled, and marketed specifically for pool and spa applications.

…

(n) Luminaires and Torchieres.

Nonpulse-start electronic ballast means an electronic ballast with a starting method other than pulse-start.

…

(o) Dishwashers.

"Compact dishwasher" means a dishwasher that has a capacity of less than eight place settings plus six serving pieces as defined in ~~specified in ANSI/AHAM DW-1 using~~ 10 C.F.R., part 430, Appendix C1 of Subpart B.

…

"Standard Dishwasher" means a dishwasher that has a capacity equal to or greater than eight place settings plus six serving pieces as defined in ~~specified in ANSI/AHAM DW-1 using~~ 10 C.F.R., part 430, Appendix C1 of Subpart B.

…

(s) Electric Motors.

"Accreditation" means recognition by an accreditation body that a laboratory is competent to test the efficiency of electric motors according to the scope and procedures given in 10 C.F.R. sections 431.1 and 431.15. Test Method B of IEEE Std 112–2004 and CSA C390–10.

…

(t) Distribution Transformers.

"Mining distribution transformer" means a medium-voltage dry-type distribution transformer that is built only for installation in an underground mine or surface mine, inside equipment for use in an underground

mine or surface mine, on-board equipment for use in an underground mine or surface mine, or for equipment used for digging, drilling, or tunneling underground or above ground, and that has a nameplate which identifies the transformer as being for this use only.

~~"Underground mining distribution transformer" means a medium-voltage dry-type distribution transformer that is built only for installation in an underground mine or inside equipment for use in an underground mine, and that has a nameplate which identifies the transformer as being for this use only.~~

...

(u) Power Supplies.

"Basic-voltage external power supply" means an external power supply that is not a low-voltage external power supply.

...

"Direct operation external power supply" means an external power supply that can operate a consumer product that is not a battery charger without the assistance of a battery.

...

"Indirect operation external power supply" means an external power supply that cannot operate a consumer product that is not a battery charger without the assistance of a battery as determined by the steps in paragraphs (1)(A) through (E) of this definition:

(1) If the external power supply (EPS) can be connected to an end-use consumer product and that consumer product can be operated using battery power, the method for determining whether that EPS is incapable of operating that consumer product directly is as follows:

(A) If the end-use product has a removable battery, remove it for the remainder of the test and proceed to the step in paragraph (1)(v) of this definition. If not, proceed to the step in paragraph (1)(ii).

(B) Charge the battery in the application via the EPS such that the application can operate as intended before taking any additional steps.

(C) Disconnect the EPS from the application. From an off mode state, turn on the application and record the time necessary for it to become operational to the nearest five second increment (5 sec, 10 sec, etc.).

(D) Operate the application using power only from the battery until the application stops functioning due to the battery discharging.

(E) Connect the EPS first to mains and then to the application. Immediately battery was removed for testing and the end-use product operates as intended, the EPS is not an indirect operation EPS and paragraph 2 of this definition does not apply. If the battery could not be removed for testing, record the time for the application to become operational to the nearest five second increment (5 seconds, 10 seconds, etc.).

(2) If the time recorded in paragraph (1)(v) of this definition is greater than the summation of the time recorded in paragraph (1)(iii) of this definition and five seconds, the EPS cannot operate the application directly and is an indirect operation EPS.

...

"Low-voltage external power supply" means an external power supply with a nameplate output voltage less than 6 volts and nameplate output current greater than or equal to 550 milliamps.

...

The following documents are incorporated by reference in Section 1602.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM Standard E 1084-86 (Reapproved 2009)	Standard Test Method for Solar Transmittance (Terrestrial) of Sheet Materials Using Sunlight
Copies available from:	ASTM 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 www.astm.org Phone: (610) 832-9585 FAX: (610) 832-9555

CANADIAN STANDARDS ASSOCIATION (CSA)

CSA C390–10	Test methods, marking requirements, and energy efficiency levels for three-phase induction motors
Copies available from:	Canadian Standards Association 178 Rexdale Blvd. Toronto, Ontario, Canada, M9W 1R3 http://shop.csa.ca/ Phone: (416) 747 4044

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

Test Method B of IEEE Std 112–2004	IEEE Standard Test Procedure for Polyphase

Induction Motors and Generators

Copies available from:

IEEE (TechStreet)
Publications Office
10662 Los Vaqueros Circle
PO Box 3014
Los Alamitos, CA 90720-1264
http://www.techstreet.com/ieee/

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c), 25402.5.4 and 25960, Public Resources Code.

Section 1604. Test Methods for Specific Appliances.

(a) Refrigerators, Refrigerator-Freezer, and Freezers.

Appliance	*Test Method*
Non-commercial refrigerators, designed for the refrigerated storage of food at temperatures above 32°F and below 39°F, configured for general refrigerated food storage; refrigerator-freezers; and freezers.	~~10 C.F.R. sections 430.23(a) (Appendix A1 to Subpart B of part 430) and 430.23(b) (Appendix B1 to Subpart B of part 430), as applicable for models manufactured before September 15, 2014~~ 10 C.F.R. sections 430.23(a) (Appendix A to Subpart B of part 430) and 430.23(b) (Appendix B to Subpart B of part 430)~~, as applicable for models manufactured on or after September 15, 2014~~
Wine chillers that are consumer products	10 C.F.R. section 430.23(a) (Appendix A1 to Subpart B of part 430), with the following modifications: Standardized temperature as referred to in Section 3.2 of Appendix A1 shall be 55°F (12.8°C). The calculation of test cycle energy expended (ET) in section 5.2.1.1 of Appendix A~~1~~ shall be made using the modified formula: ET=(EP x 1440 x k)/T Where k = 0.85

…

(c) Central Air Conditioners, Air Filters, and Heat Pump Water-Chilling Packages.

(4) The test methods for air filters are shown in Table C-2

Table C-2: Air Filter Test Methods

~~Appliance~~	Appliance ~~Performance Criteria~~	Test Method
~~Air Filters~~	Air Filter Pressure Drop	AHRI 680-2009 or ASHRAE 52.2-2012
	~~Air Filter Particle Size Efficiency and~~ Minimum Efficiency Reporting Value (MERV)	~~AHRI 680-2009 or~~ ASHRAE 52.2-2012
	Air Filter Particle Size Efficiency	AHRI 680-2009 or ASHRAE 52.2-2012
	Dust Holding Capacity	AHRI 680-2009 or ASHRAE 52.2-2012

Manufacturers shall test small, medium, and large size filters for each grade.

…

(5) Heat-pump water-chilling packages shall be tested using ANSI/AHRI 550-590 (I-P) 2011. The heating capacity tests shall be conducted at ambient temperature of each 47°F and 17°F and a leaving water temperature of 120°F. If the package is capable of cooling, it shall be tested at an ambient temperature of 95°F and a leaving water temperature of 44°F.

…

(d) Spot Air Conditioners, Evaporative Coolers, Ceiling Fans, Ceiling Fan Light Kits, Whole House Fans, Residential Exhaust Fans, and Dehumidifiers.

Table D-1
Spot Air Conditioner, Ceiling Fan, Ceiling Fan Light Kit, Evaporative Cooler, Whole House Fan, Residential Exhaust Fan, and Dehumidifier Test Methods

	Test Method
Spot Air Conditioners	ANSI/ASHRAE 128-2001
Ceiling Fans, Except Low-Profile Ceiling Fans	10 C.F.R. section 430.23(w) (Appendix U to Subpart B of part 430)
Ceiling Fan Light Kits	10 C.F.R. section 430.23(x) (Appendix V to Subpart B of part 430)
Evaporative Coolers	ANSI/ASHRAE 133-2008 for packaged direct evaporative coolers and packaged indirect/direct evaporative coolers; ANSI/ASHRAE 143-2007 for packaged indirect evaporative coolers
Whole House Fans	HVI-916, tested with manufacturer-provided louvers in place (2009)
Dehumidifiers	10 C.F.R. section 430.23(z) (Appendix X to Subpart B of part 430, active mode portion only). ~~OR 10 C.F.R. section 430.23(z) (Appendix X1 to Subpart B of part 430) (at manufacturer's discretion) for models manufactured before April 29, 2013~~ ~~10 C.F.R. section 430.23(z) (Appendix X1 to Subpart B of part 430) for models manufactured on or after April 29, 2013~~
Residential Exhaust Fans	HVI-916 (2009)
Residential Furnace Fans	10 C.F.R. section 430.23(cc) (Appendix AA to Subpart B of part 430)

…

(f) **Water Heaters**

(1) **Small Water Heaters.** The test method for small water heaters are shown in Table F-1

Table F-1
Small Water Heater Test Methods

Appliance	*Test Method*
Small water heaters that are federally-regulated consumer products	~~10 C.F.R. section 430.23(e) (Appendix E to Subpart B of part 430)~~ 10 C.F.R. part 430, subpart B, appendix E, section 5: "Test Procedures" and part 430.23(e)(4): "The alternative uniform test method for measuring the energy consumption of untested water heaters shall be that set forth in section 7.0 of appendix E of this subpart."
Small water heaters that are not federally-regulated consumer products	
Gas and oil storage-type < 20 gallons rated capacity	ANSI/ASHRAE 118.2-1993
Booster water heaters	ANSI/ASTM F2022-00 (for all matters other than volume) ANSI Z21.10.3-1998 (for volume)
Hot water dispensers	Test Method in 1604(f)(4)
Mini-tank electric water heaters	Test Method in 1604(f)(5)
All others	10 C.F.R. section 430.23(e) (Appendix E to Subpart B of part 430)

…

(j) Fluorescent Lamp Ballasts and Deep-Dimming Fluorescent Lamp Ballasts.

(3) Deep-dimming fluorescent lamp ballasts shall be tested using 10 C.F.R. Section 430.23(q) (Appendix Q1 to Subpart B of part 430) (referred to as the "federal test method" in the following subsections), modified as follows:

(A) The control signal to the ballast shall indicate full output. The arc power of all connected lamps shall be measured and then added together. This result will be referred to as "maximum arc power." An appropriate lighting control shall be selected to achieve the control signal used to determine the maximum arc power and to tune the ballast to the appropriate dimming levels. The controls shall be selected by using the following methodology:

(i) If the ballast manufacturer also manufactures a lighting control designed to be operated with the ballast, the test shall be conducted using the ballast manufacturer's lighting control. Or;

(ii) If the manufacturer does not manufacture a compatible lighting control, but recommends the use of specific manufacturer and/or model of lighting control, such as in its product documentation, the test shall be conducted using a lighting control from the list of manufacturer recommended lighting controls. Or;

(iii) If the manufacturer does not manufacture a compatible lighting control, and does not recommend any specific lighting controls, the lab technician shall select a lighting control that sufficiently controls the ballast to complete the test.

(iv) If multiple control options are available, use the lighting control that is capable of using all of the features of a ballast and with the minimum amount of other features. The lighting control manufacturer and model number shall appear on the test report.

(B) Three sets of input power and arc power shall be measured using the federal test procedure with the total arc power tuned to 100, 80, and 50 percent of the measured maximum arc power. If a step dimming ballast or a ballast that can only turn connected lamps on or off has dimming steps other than 80 and 50 percent, then the closest step that is between 90 and including 65 percent shall be used for 80 percent testing, and the closest step that is between 65 and including 35 percent shall be used for 50 percent testing. If no step exists in the above prescribed ranges, then no result shall be recorded for that percentage dimming test. The resulting input powers shall be recorded and referred to as P_{100}, P_{80}, and P_{50}. The resulting arc powers shall be recorded and referred to as AP_{100}, AP_{80}, and AP_{50}. BLE_{100} shall be calculated as AP_{100}/P_{100}, BLE_{80} as AP_{80}/P_{80}, and BLE_{50} as AP_{50}/P_{50}. The measurement of power factor shall be taken during the measurement of maximum arc power and reported.

(C) Standby mode test: the ballast shall also be tested with a control input set to the lowest dimming state possible up to and including no light output. The input power to the ballast shall be measured and recorded as P_0. The measurement must be taken 90 minutes after entering this state. P_0 shall be recorded as the mean value of measurements taken at 5 second intervals over a 5-minute period.

(D) The weighted ballast luminous efficacy shall be calculated using the following formula and table:

$$Weighted\ ballast\ luminous\ efficacy = \overline{\cancel{P}}BLE_{100} \times w_{100} + \overline{\cancel{P}}BLE_{80} \times w_{80} + \overline{\cancel{P}}BLE_{50} \times w_{50}$$

Where ~~power is in watts and~~the time values (w_{100}, w_{80}, w_{50}~~, w_0~~) are taken from the appropriate tables below:

Percentage Time of Operation Table

Time Variable	Measurements taken			
	P_{80}, P_{50}	P_{80}, no P_{50}	No P_{80}, P_{50}	No P_{80}, No P_{50}
w_{100}	0.2	0.35	0.45	1
w_{80}	0.5	0.65	0	0
w_{50}	0.3	0	0.55	0

…

(o) Dishwashers.

The test method for dishwashers is 10 C.F.R. section 430.23(c) (Appendix C1 to Subpart B of part 430).

…

(p) Clothes Washers

The test methods for clothes washers that are consumer products and commercial clothes washers is 10 C.F.R.section 430.23(j) (Appendix J~~1~~2 to Subpart B of part 430).

…

The following documents are incorporated by reference in Section 1604.

AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE (AHRI)

AHRI 680-2009 2009 Standard for Performance Rating of Residential Air Filter Equipment

Copies available from: Air-Conditioning, Heating, and Refrigeration Institute (AHRI)
2111 Wilson Blvd, Suite 500
Arlington, VA 22201
Phone: (703) 524-8800
FAX: (703) 562-1942
http://www.ahrinet.org/

…

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 52.2-2012 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size

...

Note: Authority cited: Sections 25213, 25218(e), 25401(d), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c) and 25960, Public Resources Code.

Section 1605.1. Federal and State Standards for Federally-Regulated Appliances.

(a)Refrigerators, Refrigerator-Freezers, and Freezers.

…

Table A-3 [change is to footnote]

[1]AV = adjusted total volume, expressed in ft^3, as determined in 10 C.F.R., part 430, Appendices A~~1~~ and B~~1~~ of Subpart B~~, which is:~~
~~[1.44 x freezer volume (ft3)] + refrigerator volume (ft3) for refrigerators;~~
~~[1.63 x freezer volume (ft3)] + refrigerator volume (ft3) for refrigerator-freezers;~~
~~[1.73 x freezer volume (ft3)] for freezers~~.

(2) **Commercial Refrigerators, Commercial Refrigerator-Freezers, and Commercial Freezers.**

(A) The daily energy consumption (in kilowatt hours per day) of each commercial refrigerator-freezer with solid doors and a self-contained condensing unit, manufactured on or after January 1, 2010 and before March 27, 2017, shall be not greater than the greater of ((0.27 × adjusted volume) – 0.71) or 0.70 kWh.

Table A-4.
Standards for Commercial Refrigerators and Freezers
with a Self-Contained Condensing Unit That are Not Commercial Hybrid Units

Equipment Category and Effective Date	*Condensing Unit Configuration*	*Equipment Family*	*Rating Temperature (°F)*	*Operating Temperature (°F)*	*Equipment Class Designation**	*Maximum Daily Energy Consumption (kWh)*
Refrigerators and Freezers Effective January 1, 2010 ~~1~~Effective January 1, 2012	Self Contained (SC)	Vertical Closed Transparent (VCT)	38 (M) 0 (L)	≥ 32 < 32	VCT, SC, M VCT, SC, L	0.12 × V + 3.34 0.75 × V + 4.10
		Horizontal Closed Transparent (HCT)	38 (M) 0 (L)	≥ 32 < 32	HCT, SC, M HCT, SC, L	0.12 × V + 3.34 0.75 × V + 4.10
		Vertical Closed Solid (VCS)	38 (M) 0 (L)	≥ 32 < 32	VCS, SC, M VCS, SC, L	0.10 × V + 2.04 0.40 × V + 1.38
		Horizontal Closed Solid (HCS)	38 (M) 0 (L)	≥ 32 < 32	HCS, SC, M HCS, SC, L	0.10 × V + 2.04 0.40 × V + 1.38
		Service Over Counter (SOC)	38 (M) 0 (L)	≥ 32 < 32	SOC, SC, M SOC, SC, L	0.12 × V + 3.34 0.6 × TDA + 1.0[1] 0.75 × V + 4.10

…

(3) Automatic Commercial Ice Makers.

(A) Each cube type automatic commercial ice maker ~~that produces cube type ice~~ with capacities between 50 and 2500 pounds per 24-hour period ~~when tested according to the test standard established in accordance with section 343 of EPCA (42 U.S.C. 6314)~~ and is manufactured on or after January 1, 2010 and before January 28, 2018, shall meet the standard levels set forth in Table A-7.

Table A-7
Standards for Cube Type Automatic Commercial Ice Makers
Manufactured on or After January 1, 2010 and Before January 28, 2018

(B) Each batch type automatic commercial ice maker with capacities between 50 and 4000 pounds per 24-hour period and is manufactured on or after January 28, 2018, shall meet the standard levels set forth in Table A-8.

Table A-8
Standards for Batch Type Automatic Commercial Ice Makers
Manufactured on or After January 28, 2018

Equipment type	*Type of cooling*	*Harvest rate (lbs ice/24 hours)*	*Maximum energy use (kWh/100 lbs ice)*	*Maximum condenser water use* (gal/100 lbs ice)*
Ice Making Head	Water	≥ 50 and < 300	6.88-0.0055H	200–0.022H.
Ice Making Head	Water	≥ 300 and < 850	5.80-0.00191H	200–0.022H.
Ice Making Head	Water	≥ 850 and < 1500	4.42-0.00028H	200–0.022H.
Ice Making Head	Water	≥ 1500 and < 2500	4.0	200–0.022H
Ice Making Head	Water	≥ 2500 and < 4000	4.0	145
Ice Making Head	Air	≥ 50 and < 300	10-0.01233H	Not applicable.
Ice Making Head	Air	≥ 300 and < 800	7.05-0.0025H	Not applicable.
Ice Making Head	Air	≥ 800 and < 1500	5.55-0.00063H	Not applicable.
Ice Making Head	Air	≥ 1500 and < 4000	4.61	Not applicable.
Remote Condensing (but	Air	≥ 50 and < 988	7.97-0.00342H	Not

not remote compressor)				applicable.
Remote Condensing (but not remote compressor)	Air	≥ 988 and < 4000	4.59	Not applicable.
Remote Condensing and Remote Compressor	Air	≥ 50 and < 930	7.97-0.00342H	Not applicable.
Remote Condensing and Remote Compressor	Air	≥ 930 and < 4000	4.79	Not applicable.
Self Contained	Water	≥ 50 and < 200	9.5-0.019H	191-0.0315H.
Self Contained	Water	≥ 200 and < 2500	5.7	191-0.0315H
Self Contained	Water	≥ 2500 and < 4000	5.7	112
Self Contained	Air	≥ 50 and < 110	14.79-0.0469H	Not applicable.
Self Contained	Air	≥ 110 and < 200	12.42-0.02533H	Not applicable.
Self Contained	Air	≥ 200 and < 4000	7.35	Not applicable.
H: Harvest rate in pounds per 24 hours. *Water use is for the condenser only and does not include potable water used to make ice.				

(C) Each continuous type automatic commercial ice maker with capacities between 50 and 4,000 pounds per 24-hour period manufactured on or after January 28, 2018, shall meet the standard levels set forth in Table A-9.

Table A-9
Standards for Continuous Type Automatic Commercial Ice Makers Manufactured on or After January 28, 2018

Equipment type	*Type of cooling*	*Harvest rate (lbs ice/24 hours)*	*Maximum energy use (kWh/100 lbs ice)*	*Maximum condenser water use* (gal/100 lbs ice)*
Ice Making Head	Water	≥ 50 and < 801	6.48-0.00267H	180-0.0198H
Ice Making Head	Water	≥ 801 and < 2500	4.34	180-0.0198H.
Ice Making Head	Water	≥ 2500 and < 4000	4.34	130.5
Ice Making Head	Air	≥ 50 and < 310	9.19-0.00629H	Not applicable.
Ice Making Head	Air	≥ 310 and < 820	8.23-0.0032H	Not applicable.

Ice Making Head	Air	≥ 820 and < 4000	5.61	Not applicable.
Remote Condensing (but not remote compressor)	Air	≥ 50 and < 800	9.7-0.0058H	Not applicable.
Remote Condensing (but not remote compressor)	Air	≥ 800 and < 4000	5.06	Not applicable.
Remote Condensing and Remote Compressor	Air	≥ 50 and < 800	9.9-0.0058H	Not applicable.
Remote Condensing and Remote Compressor	Air	≥ 800 and < 4000	5.26	Not applicable.
Self Contained	Water	≥ 50 and < 900	7.6-0.00302H	153-0.0252H.
Self Contained	Water	≥ 900 and < 2500	4.88	153-0.0252H
Self Contained	Water	≥ 2500 and < 4000	4.88	90
Self Contained	Air	≥ 50 and < 200	14.22-0.03H	Not applicable.
Self Contained	Air	≥ 200 and < 700	9.47-0.00624H	Not applicable.
Self Contained	Air	≥ 700 and < 4000	5.1	Not applicable.
H Harvest rate in pounds per 24 hours. *Water use is for the condenser only and does not include potable water used to make ice.				

(4) Walk-In Coolers and Walk-In Freezers.

1. A walk-in cooler or walk-in freezer component if the component manufacturer has demonstrated to the satisfaction of the Secretary in a manner consistent with applicable requirements that the component reduces energy consumption at least as much as if such insulation requirements of Section 1605.1(a)(4)(C) of this Article were to apply.

(6) Refrigerated Canned and Bottled Beverage Vending Machines. The daily energy consumption (in kilowatt hours per day) when measured at the 75°F ± 2°F and 45 ± 5% RH condition of each refrigerated bottled or canned beverage vending machine manufactured on or after August 31, 2012 shall be not greater than the values shown in Table A-~~8~~10.

Table A-~~8~~10
Standards for Refrigerated Canned and Bottled Beverage Vending Machines
Manufactured On or After August 31, 2012

…

(b) Room Air Conditioners, Room Air-Conditioning Heat Pumps, Packaged Terminal Air Conditioners, and Packaged Terminal Heat Pumps.

…

(2) **Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps.**

~~(A) The EER and COP, as applicable, of non-standard size packaged terminal air conditioners and non-standard size packaged terminal heat pumps manufactured before October 7, 2010 and standard size packaged terminal air conditioners and standard size packaged terminal heat pumps manufactured before October 8, 2012 shall be not less than the applicable values shown in Table B-4.~~

~~**Table B-4**~~

~~**Standards for Non-Standard Size Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps Manufactured Before October 7, 2010 and Standard Size Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps Manufactured Before October 8, 2012**~~

~~*Appliance*~~	~~*Mode*~~	~~*Cooling Capacity (Btu/hr)*~~	~~*Minimum EER or COP*~~
~~Packaged terminal air conditioners and packaged terminal heat pumps~~	~~Cooling~~	~~≤ 7,000~~	~~8.88 EER~~
		~~> 7,000 and < 15,000~~	~~10.0 – (0.00016 x Cap.) EER~~
		~~≥ 15,000~~	~~7.6 EER~~
~~Packaged terminal heat pumps~~	~~Heating~~	~~≤ 7,000~~	~~2.72~~
		~~> 7,000 and < 15,000~~	~~1.3 + [0.16 (10.0 – 0.00016 x Cap.)] COP~~
		~~≥ 15,000~~	~~2.52~~
~~Cap. = cooling capacity (Btu/hr)~~			

~~(B)~~(A) The EER and COP, as applicable, of non-standard size packaged terminal air conditioners and non standard size packaged terminal heat pumps manufactured on or after October 7, 2010, and of standard size packaged terminal air conditioners and standard size packaged terminal heat pumps manufactured on or after October 8, 2012 shall be not less than the applicable values shown in Tables ~~B-5 and B-6~~ B-4 and B-5.

~~**Table B-5**~~ **Table B-4**

~~**Table B-6**~~ **Table B-5**

…

(c) Central Air Conditioners.

(1) **Central Air Conditioners.** The EER, SEER, COP, HSPF, and SCOP, as applicable, of all central air conditioners, including computer room air conditioners, shall be not less than the applicable values shown in Tables ~~C-2,~~ C-3, C-4, C-5, ~~and~~ C-6, ~~and~~ C-7, and C-8.

~~**Table C-2**~~ **Table C-3**

~~**Table C-3**~~ **Table C-4**

~~**Table C-4**~~ **Table C-5**

~~**Table C-5**~~ **Table C-6**

~~Table C-6~~ Table C7

Table C-~~7~~8
Standards for Variable Refrigerant Flow Multi-Split Air Conditioners and Heat Pumps

Equipment type	Cooling capacity	Heating type[1]	Efficiency level	Compliance date: Products manufactured on and after . . .
VRF Multi-Split Air Conditioners (Air-Cooled)	<65,000 Btu/h	All	13.0 SEER	June 16, 2008
	≥65,000 Btu/h and <135,000 Btu/h	No Heating or Electric Resistance Heating	11.2 EER	January 1, 2010
		All Other Types of Heating	11.0 EER	January 1, 2010
	≥135,000 Btu/h and <240,000 Btu/h	No Heating or Electric Resistance Heating	11.0 EER	January 1, 2010
		All Other Types of Heating	10.8 EER	January 1, 2010
	≥240,000 Btu/h and <760,000 Btu/h	No Heating or Electric Resistance Heating	10.0 EER	January 1, 2010
		All Other Types of Heating	9.8 EER	January 1, 2010
VRF Multi-Split Heat Pumps (Air-Cooled)	<65,000 Btu/h	All	13.0 SEER 7.7 HSPF	June 16, 2008
	≥65,000 Btu/h and <135,000 Btu/h	No Heating or Electric Resistance Heating	11.0 EER 3.3 COP	January 1, 2010
		All Other Types of Heating	10.8 EER 3.3 COP	January 1, 2010
	≥135,000 Btu/h and <240,000 Btu/h	No Heating or Electric Resistance Heating	10.6 EER 3.2 COP	January 1, 2010
		All Other Types of Heating	10.4 EER 3.2 COP	January 1, 2010
	≥240,000 Btu/h and <760,000 Btu/h	No Heating or Electric Resistance Heating	9.5 EER 3.2 COP	January 1, 2010
		All Other Types of	9.3 EER	January 1, 2010

		Heating	3.2 COP	
VRF Multi-Split Heat Pumps (Water-Source)	<17,000 Btu/h	Without heat recovery	12.0 EER 4.2 COP	October 29, 2012 October 29, 2003
		With heat recovery	11.8 EER 4.2 COP	October 29, 2012 October 29, 2003
	≥17,000 Btu/h and <65,000 Btu/h	All	12.0 EER 4.2 COP	October 29, 2003
	≥65,000 Btu/h and <135,000 Btu/h	All	12.0 EER 4.2 COP	October 29, 2003
	≥135,000 Btu/h and <760,000 Btu/h	Without heat recovery	10.0 EER 3.9 COP	October 29, 2013
		With heat recovery	9.8 EER 3.9 COP	October 29, 2013
[1]VRF Multi-Split Heat Pumps (Air-Cooled) with heat recovery fall under the category of "All Other Types of Heating" unless they also have electric resistance heating, in which case it falls under the category for "No Heating or Electric Resistance Heating."				

…

(c) (4) Heat Pump Water Chilling Packages.

There is no energy efficiency standard or energy design standard for heat-pump, water-chilling packages.

…

(e) Gas and Oil Space Heaters and Electric Residential Boilers.

…

Table E-6
Standards for Gas- and Oil-Fired Central Furnaces Less Than 225,000 Btu/hour Input and Residential Electric Furnaces

~~Appliance~~	~~Fuel~~	~~Type~~	~~Minimum AFUE~~	~~Effective Date~~
~~Mobile Home Furnace~~	~~Gas, Oil~~	~~—~~	~~75~~	~~September 1, 1990~~
	~~Gas~~	~~Weatherized~~	~~80~~	~~January 1, 2015~~
		~~Non-Weatherized~~		~~July 1, 2013~~
	~~Oil~~	~~Weatherized~~	~~75~~	~~January 1, 2015~~
		~~Non-Weatherized~~		~~July 1, 2013~~
~~Non Mobile Home Furnace~~	~~Gas, Oil~~	~~—~~	~~78~~	~~January 1, 1992~~
	~~Gas~~	~~Weatherized~~	~~81~~	~~January 1, 2015~~
		~~Non-Weatherized~~	~~80~~	~~July 1, 2013~~

	~~Oil~~	~~Weatherized~~	~~78~~	~~January 1, 2015~~
		~~Non-Weatherized~~	~~83~~	~~July 1, 2013~~
~~Residential Furnace~~	~~Electricity~~	~~Weatherized~~	~~78~~	~~January 1, 2015~~
		~~Non-Weatherized~~	~~78~~	~~July 1, 2013~~

Product class	AFUE (percent)	Compliance date
(A) Non-weatherized gas furnaces (not including mobile home furnaces)	80	November 19, 2015.
(B) Mobile Home gas furnaces	80	November 19, 2015.
(C) Non-weatherized oil-fired furnaces (not including mobile home furnaces)	83	July 1, 2013.
(D) Mobile Home oil-fired furnaces	75	September 1, 1990.
(E) Weatherized gas furnaces	81	January 1, 2015.
(F) Weatherized oil-fired furnaces	78	January 1, 1992.
(G) Electric furnaces	78	January 1, 1992.

…

(f) Water Heaters.

…

(2) **Small Water heaters**. The energy factor of all small water heaters that are federally-regulated consumer products, (other than booster water heaters, hot water dispensers, and mini-tank electric water heaters) shall be not less than the applicable values shown in Table F-3.

Table F-3
Standards for Small Federally-Regulated Water Heaters

Appliance	*Rated Storage Volume (gallons)*	*Minimum Energy Factor*	
		~~*Effective January 20, 2004*~~	*Effective April 16, 2015*
Gas-fired storage-type water heaters	≤ 55	~~0.67 – (.0019 x V)~~	0.675−(0.0015 × V)
	> 55		0.8012−(0.00078 × V)
Oil-fired water heaters (storage ~~and instantaneous)~~	Any	~~0.59 – (.0019 x V)~~	0.68 – (.0019 x V)
Electric storage water heaters (excluding tabletop water heaters)	≤ 55	~~0.97 – (.00132 x V)~~	0.960−(0.0003 × V)
	> 55		2.057−(0.00113 × V)
~~Electric~~ T~~t~~abletop water heaters	Any	~~0.93 – (.00132 x V)~~	0.93 – (.00132 x V)
Gas-fired instantaneous water heaters	Any	~~0.62 – (.0019 x V)~~	0.82 – (.0019 x V)
Electric instantaneous water heaters (excluding tabletop water heaters)	Any	~~0.93 – (.00132 x V)~~	0.93 – (.00132 x V)
Heat pump water heaters	Any	~~0.97 – (.00132 x V)~~	0.97 – (.00132 x V)
V = Rated storage volume in gallons.			

…

(j) Fluorescent Lamp Ballasts and Deep-Dimming Fluorescent Lamp Ballasts.

…

(k) Lamps.

…

(2) Federally-Regulated Incandescent Reflector Lamps.

2. The standards specified in Table K-3 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;
b. Lamps rated at 65 watts that are BR30, BR40, or ER40 lamps; and
c. R20 incandescent reflector lamps rated 45 watts or less;
d. R20 short lamps.

…

(n) Luminaires and Torchieres.

…

~~(2) **Metal Halide Lamp Fixtures.** Metal halide lamp fixtures designed to be operated with lamps rated greater than or equal to 150 watts but less than or equal to 500 watts, manufactured on or after January 1, 2009, shall contain:~~

~~(A) A pulse-start metal halide ballast with a minimum ballast efficiency of 88 percent;~~
~~(B) A magnetic probe-start ballast with a minimum ballast efficiency of 94 percent; or~~
~~(C) A nonpulse-start electronic ballast with either:~~

~~1. a minimum ballast efficiency of 92 percent for wattages greater than 250 watts; or~~
~~2. a minimum ballast efficiency of 90 percent for wattages less than or equal to 250 watts.~~

~~(D) This subsection does not apply to any metal halide lamp fixture:~~

~~1. with regulated lag ballasts;~~
~~2. that uses electronic ballasts that operate at 480 volts; or~~
~~3. that (i) are rated only for 150 watt lamps; (ii) are rated for use in wet locations, as specified by the National Electrical Code 2002, Section 410.4(A): and (iii) contain a ballast that is rated to operate at ambient air temperatures above 50°C., as specified by UL 1029-2001.~~

~~(3)~~ See Section 1605.3(n) for energy efficiency standards and energy design standards for luminaires, including standards for metal halide luminaires sold or offered for sale in California that are manufactured~~:~~

~~(A) prior to January 1, 2009, or~~
~~(B)~~ on or after January 1, 2010.

(2) Each metal halide lamp fixture, designed to be operated with lamps less than 150 W and greater than 500 W, manufactured on or after February 10, 2017, must contain a metal halide ballast with an efficiency not less than the value determined from the appropriate equation in the following table:

Table N-1

Designed to be operated with lamps of the following rated lamp wattage	Tested input voltage‡‡	Minimum standard equation‡‡ %
≥50 W and ≤100 W	Tested at 480 V	(1/(1+1.24×P^(−0.351))) − 0.020‡‡;
≥50 W and ≤100 W	All others	1/(1+1.24×P^(−0.351))
>100 W and <150‡; W	Tested at 480 V	(1/(1+1.24×P^(−0.351))) − 0.020
>100 W and <150‡; W	All others	1/(1+1.24×P^(−0.351))
>500 W and ≤1000 W	Tested at 480 V	For >500 W and ≤750 W: 0.900
		For >750 W and ≤1000 W: 0.000104×P+0.822
		For >500 W and ≤1000 W: may not utilize a probe-start ballast
>500 W and ≤1000 W	All others	For >500 W and ≤750 W: 0.910
		For >750 W and ≤1000 W: 0.000104×P+0.832
		For >500 W and ≤1000 W: may not utilize a probe-start ballast

‡ Includes 150 W fixtures specified in paragraph (b)(3) of this section, that are fixtures rated only for 150 W lamps; rated for use in wet locations, as specified by the NFPA 70 (incorporated by reference, see §431.323), section 410.4(A); and containing a ballast that is rated to operate at ambient air temperatures above 50 °C, as specified by UL 1029 (incorporated by reference, see §431.323).

‡ Excludes 150 W fixtures specified in paragraph (b)(3) of this section, that are fixtures rated only for 150 W lamps; rated for use in wet locations, as specified by the NFPA 70, section 410.4(A); and containing a ballast that is rated to operate at ambient air temperatures above 50 °C, as specified by UL 1029.

‡‡ P is defined as the rated wattage of the lamp the fixture is designed to operate.

‡‡ Tested input voltage is specified in 10 C.F.R 431.324.

(d) Except as provided in paragraph (e) of this section, metal halide lamp fixtures manufactured on or after February 10, 2017, that operate lamps with rated wattage >500 W to ≤1000 W must not contain a probe-start metal halide ballast.

(e) The standards described in paragraphs (c) and (d) of this section do not apply to—

(1) Metal halide lamp fixtures with regulated-lag ballasts;
(2) Metal halide lamp fixtures that use electronic ballasts that operate at 480 volts; and
(3) Metal halide lamp fixtures that use high-frequency electronic ballasts.

…

(p) Clothes Washer.

…

(3) **Commercial Clothes Washers.** Commercial clothes washers manufactured on or after the effective dates shown shall have a modified energy factor not less than, and a water factor not greater than, the applicable values shown in Table P-3.

Table P-3
Standards for Commercial Clothes Washers

Appliance	*Minimum Modified Energy Factor*		*Maximum Water Factor*	
	~~*Effective January 1, 2007*~~	*Effective January 8, 2013*	~~*Effective January 1, 2007*~~	*Effective January 8, 2013*
Top-loading clothes washers	~~1.26~~	1.60	~~9.5~~	8.5
Front-loading clothes washers	~~1.26~~	2.00	~~9.5~~	5.5
	Modified Energy Factor (MEF) Cu. ft./kWh/cycle		*Integrated Water factor (IWF) gal./cu./cycle*	
	Effective January 1, 2018		*Effective January 1, 2018*	
Top-loading clothes washers	1.35		8.8	
Front-loading clothes washers	2.00		4.1	

…

(r) Cooking Products and Food Service Equipment.

…

(2) **Microwave Ovens Manufactured on or After June 17, 2016.**

Microwave-only ovens, countertop convection microwave ovens, built-in microwave ovens, and over-the-range convection microwave ovens manufactured on or after June 17, 2016 shall ~~be~~ not exceed ~~less than~~ the ~~maximum~~ average standby power rating (watts) shown in Table R-2.

…

(u) Power Supplies.

…

(d) Direct operation external power supplies manufactured on or after February 10, 2016 shall meet the standards in table U-2 with the exception of those described in subpart (i) and (ii) of this section.

Table U-2 Federal Standards for Direct Operation External Power Supplies

Single-Voltage External AC-DC Power Supply, Basic-Voltage		
Nameplate Output Power (P_{out})	**Minimum Average Efficiency in Active Mode** *(expressed as a decimal)*	**Maximum Power in No-Load Mode [W]**
$P_{out} \leq 1$ W	$\geq 0.5 \times P_{out} + 0.16$	≤ 0.100
$1 \text{ W} < P_{out} \leq 49$ W	$\geq 0.071 \times \ln(P_{out}) - 0.0014 \times P_{out} + 0.67$	≤ 0.100
$49 \text{ W} < P_{out} \leq 250$ W	≥ 0.880	≤ 0.210
$P_{out} > 250$ W	≥ 0.875	≤ 0.500
Single-Voltage External AC-DC Power Supply, Low-Voltage		
Nameplate Output Power (P_{out})	**Minimum Average Efficiency in Active Mode** *(expressed as a decimal)*	**Maximum Power in No-Load Mode [W]**
$P_{out} \leq 1$ W	$\geq 0.517 \times P_{out} + 0.087$	≤ 0.100
$1 \text{ W} < P_{out} \leq 49$ W	$\geq 0.0834 \times \ln(P_{out}) - 0.0014 \times P_{out} + 0.609$	≤ 0.100
$49 \text{ W} < P_{out} \leq 250$ W	≥ 0.870	≤ 0.210
$P_{out} > 250$ W	≥ 0.875	≤ 0.500
Single-Voltage External AC-AC Power Supply, Basic-Voltage		
Nameplate Output Power (P_{out})	**Minimum Average Efficiency in Active Mode** *(expressed as a decimal)*	**Maximum Power in No-Load Mode [W]**
$P_{out} \leq 1$ W	$\geq 0.5 \times P_{out} + 0.16$	≤ 0.210
$1 \text{ W} < P_{out} \leq 49$ W	$\geq 0.071 \times \ln(P_{out}) - 0.0014 \times P_{out} + 0.67$	≤ 0.210
$49 \text{ W} < P_{out} \leq 250$ W	≥ 0.880	≤ 0.210

$P_{out} > 250$ W	≥ 0.875	≤ 0.500
Single-Voltage External AC-AC Power Supply, Low-Voltage		
Nameplate Output Power (P_{out})	**Minimum Average Efficiency in Active Mode** (*expressed as a decimal*)	**Maximum Power in No-Load Mode [W]**
49 W < P_{out} ≤ 250 W	≥ 0.870	≤ 0.210
$P_{out} > 250$ W	≥ 0.875	≤ 0.500
Multiple-Voltage External Power Supply		
Nameplate Output Power (P_{out})	**Minimum Average Efficiency in Active Mode** (*expressed as a decimal*)	**Maximum Power in No-Load Mode [W]**
$P_{out} \leq 1$ W	$\geq 0.497 \times P_{out} + 0.067$	≤ 0.300
1 W < P_{out} ≤ 49 W	$\geq 0.075 \times \ln(P_{out}) + 0.561$	≤ 0.300
$P_{out} > 49$ W	≥ 0.860	≤ 0.300

(i) An external power supply shall not be subject to the standards in table U-2 if it is a device that requires Federal Food and Drug Administration (FDA) listing and approval as a medical device in accordance with section 513 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 360(c)).

(ii) A direct operation, AC–DC external power supply with nameplate output voltage less than 3 volts and nameplate output current greater than or equal to 1,000 milliamps that charges the battery of a product that is fully or primarily motor operated shall not be subject to the standards in table U-2.

…

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c) and 25960, Public Resources Code.

Section 1605.2. State Standards for Non-Federally-Regulated Appliances.

…

(j) Fluorescent Lamp Ballasts and Deep-Dimming Fluorescent Lamp Ballasts.

(1) See Section 1605.1(j) for energy efficiency standards for fluorescent lamp ballasts that are federally regulated consumer products.

(2) See Section 1605.3(j) for energy efficiency standards for deep dimming fluorescent lamp ballasts that are state regulated.

Note: Authority cited: Sections 25213, 25218(e), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c) and 25960, Public Resources Code.

Section 1605.3. State Standards for Non-Federally-Regulated Appliances.

…

(a) Refrigerators, Refrigerators-Freezers, and Freezers.

(1) Energy Efficiency Standard for Wine Chillers. The energy consumption of wine chillers designed and sold for use by an individual shall be no greater than the applicable values shown in Table A-~~9~~11.

Table A-~~9~~11
Standards for Wine Chillers

…

(2) Energy Efficiency Standard for Freezers. The energy consumption of freezers that exceed 30 ft^3, do not exceed 39 ft^3, are designed and sold for use by an individual consumer, and are manufactured on or after March 1, 2003, shall be no greater than the applicable values shown in Table A-~~10~~12.

Table A-~~10~~12
Standards for Freezers that are Consumer Products

…

(5) **Energy Efficiency Standards for Wine Chillers That Are Not Consumer Products and That Are Manufactured Before January 1, 2012.** The daily energy consumption of wine chillers that are not consumer products manufactured on or after the effective dates shown and before January 1, 2012, shall be no greater than the applicable values shown in Table A-~~11~~13.

Table A-~~11~~13
Standards for Wine Chillers that are Not
Consumer Products and That Are Manufactured Before January 1, 2012

…

~~(6) **Energy Efficiency Standard for Refrigerated Canned and Bottled Beverage Vending Machines.**~~

~~(A) The daily energy consumption of refrigerated canned and bottled beverage vending machines, manufactured on or after January 1, 2006 and before August 31, 2012 shall be no greater than the applicable values shown in Table A-12.~~

~~(B) See Section 1605.1(a)(6) for energy consumption standards for refrigerated canned and bottled beverage vending machines manufactured on or after August 31, 2012.~~

~~(7) **Energy Design Standard for Refrigerated Canned and Bottled Beverage Vending Machines.** Refrigerated canned and bottled beverage vending machines manufactured on or after January 1, 2006 and before August 31, 2012 shall be equipped with hard wired controls or software capable of automatically placing the machine into each of the following low power mode states and of automatically returning the machine to its normal operating conditions at the conclusion of the low power mode:~~

~~(A) Lighting low power state - lights off for an extended period.~~

~~(B) Refrigeration low power state - the average beverage temperature is allowed to rise above 40°F for an extended period of time.~~

~~(C) Whole machine low power state - the lights are off and the refrigeration operates in its low power state.~~

~~The low power mode-related controls/software shall be capable of on-site adjustments by the vending operator or machine owner.~~

~~Table A-12~~
~~Standards for Refrigerated Canned and Bottled Beverage Vending Machines~~
~~Manufactured On or After January 1, 2006 and Before August 31, 2012~~

~~Appliance~~	~~Doors~~	~~Maximum Daily Energy Consumption (kWh)~~	
		~~January 1, 2006~~	~~January 1, 2007~~
~~Refrigerated canned and bottled beverage vending machines when tested at 90°F ambient temperature except multi-package units~~	~~Not applicable~~	~~0.55(8.66 + (0.009 × C))~~	~~0.55(8.66 + (0.009 × C))~~
~~Refrigerated multi-package canned and bottled beverage vending machines when tested at 75°F ambient temperature~~	~~Not applicable~~	~~0.55(8.66 + (0.009 × C))~~	~~0.55(8.66 + (0.009 × C))~~
~~V = total volume (ft³)~~ ~~AV = Adjusted Volume = [1.63 x freezer volume (ft³)] + refrigerator volume (ft³)~~ ~~C=Rated capacity (number of 12 ounce cans)~~			

(~~8~~6) **Energy Efficiency Standard for Water Dispensers.** The standby energy consumption of bottle-type water dispensers, and point of use water dispensers, dispensing both hot and cold water, manufactured on or after January 1, 2006, shall not exceed 1.2 kWh/day.

(~~9~~7) **Other Refrigeration Equipment.** See Section 1605.1(a) for energy efficiency standards for refrigerators, refrigerator-freezers, and freezers.

…

(c) Central Air Conditioners ~~(c)~~, Air Filters, and Heat Pump Water-Chilling Packages.

(1) **Energy Efficiency Standards for Ground Water-Source Heat Pumps and Ground-Source Heat Pumps.** The EER and COP for ground water-source heat pumps and ground-source heat pumps manufactured on or after October 29, 2003, shall be not less than the applicable values shown in Table C-~~7~~8.

Table C-~~7~~8

Standards for Ground Water-Source and Ground-Source Heat Pumps

(2) **Energy Efficiency Standards for Computer Room Air Conditioners.** The EER of evaporatively-cooled computer room air conditioners manufactured on or after the effective dates shown, shall be not less than the applicable values shown in Table C-~~8~~9.

Table C-~~8~~9

Standards for Evaporatively Cooled Computer Room Air Conditioners

(5) **Heat Pump Water Chilling Packages.** There is no energy efficiency standard or energy design standard for heat pump water-chilling packages. The performance of each model shall be reported per the requirements of section 1606 for equipment manufactured on or after ~~May~~July 1, 2016.

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(j) Fluorescent Lamp Ballasts and Deep-Dimming Fluorescent Lamp Ballasts.

(1) Deep-Dimming Fluorescent Lamp Ballasts. Deep-dimming fluorescent lamp ballasts manufactured on or after ~~May~~July 1, 2016 shall meet the following energy conservation standards:

(i) Shall not consume more than 1 watt in standby mode;
(ii) Shall have a power factor of 0.9 or greater; and
(iii) Shall have a weighted ballast luminous efficacy greater than or equal to the threshold described in the following equation:

$$Weighted\ Ballast\ Luminous\ Efficacy \geq \frac{AP_{100}\ *}{AP_{100} \times 1.091 + 7.55}$$

*AP_{100} is shorthand for maximum arc power as defined in section 1602 and discussed in section 1604.

(2) See section 1605.1(j) for energy efficiency standards for fluorescent lamp ballasts that are federally regulated consumer products.

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(n) Luminaires and Torchieres.

(1) **Energy Efficiency Standard for Metal Halide Luminaires.** Metal halide luminaires rated at least partially within the range of 150 to 500 watts shall not have probe-start ballasts and shall comply with Section 1605.3(n)(1)(A) as applicable:

(C) See section 1605.1(n) for energy efficiency standards for metal halide luminaires rated under 150 W and above 500 W.

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(u) Power Supplies.

The efficiency in the active mode of state-regulated external power supplies, manufactured on or after the effective dates shown when tested at 115 volts at 60 Hz, shall be not less than the applicable values shown (expressed as the decimal equivalent of a percentage); and the energy consumption in the no-load mode of power supplies manufactured on or after the effective dates when tested at 115 volts at 60 Hz, shown shall be not greater than the applicable values shown in Table U-~~2~~3 and Table U-~~3~~4.

EXCEPTION to Section 1605.3(u): A power supply that is made available by a manufacturer directly to a consumer or to a service or repair facility after and separate from the original sale of the product requiring the power supply as a service part, or spare part shall not be required to meet the Standards for Power Supplies in Table U-~~2~~3 and Table U-~~3~~4 until five years after the effective dates indicated in Table U-~~2~~3 and Table U-~~3~~4.

Table U-~~2~~3
Standards for State-Regulated External Power Supplies
Effective January 1, 2007 for external power supplies used with laptop computers, mobile phones, printers, print servers, scanners, personal digital assistants (PDAs), and digital cameras.
Effective July 1, 2007 for external power supplies used with wireline telephones and all other applications.

Table U-~~3~~4
Standards for State-Regulated External Power Supplies
Effective July 1, 2008

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Note: Authority cited: Sections 25213, 25218(e), 25401(d), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c), 25402.5.4 and 25960.

Section 1606. Filing by Manufacturers; Listing of Appliances in Database.

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Table X Continued - Data Submittal Requirements

	Appliance	**Required Information**	Permissible Answers
	All Appliances	* Manufacturer's Name	
		* Brand Name	
		* Model Number	
		Date model to be displayed	
		Regulatory Status	Federally-regulated consumer product, federally-regulated commercial and industrial equipment, non-federally-regulated

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances

…

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
A	Self-contained Commercial Refrigerators with or without doors, Self-contained Commercial Refrigerator-Freezers with doors, Self-contained Commercial Freezers with or without doors, Self-contained Commercial Refrigerators specifically designed for display and sale of bottled or canned beverages without doors, Remote Condensing Commercial Refrigerators, Remote Condensing Commercial Freezers, Commercial Ice Cream Freezers Certification of Self-contained Commercial Refrigerators without doors, Self-contained Commercial Freezers without doors, Remote Condensing Commercial Refrigerators, Remote Condensing Commercial Freezers, and Commercial Ice Cream Freezers, including all Energy Consumption values except Daily Energy Consumption, is not required for models manufactured before January 1, 2012 (Note: units with multiple compartments must certify data for each compartment)	**Cabinet Style*	Ice cream cabinet; milk or beverage cabinet; milk, beverage, or ice cream cabinet; undercounter cabinet; other reach-in cabinet; pass-through cabinet; roll-in or roll-through cabinet; preparation table; buffet table; wedge case; work top table; wine chiller
		~~*~~Defrost System	Automatic, manual, partial-automatic
		*Type	Ice-cream application, low-temperature application, medium-temperature application, pull-down application
		~~*Door Style (for units manufactured before January 1, 2012 only~~) Total Compartments (for hybrid models and refrigerator-freezers)	~~Solid hinged, solid sliding, transparent hinged, transparent sliding, none.~~
		Equipment Family ~~(for those units manufactured on or after January 1, 2012 only)~~	Vertical open, semivertical open, horizontal open, vertical closed transparent, horizontal closed transparent, vertical closed solid, horizontal closed solid, service over counter
		Condensing Unit Configuration ~~(for those units manufactured on or after January 1, 2012 only)~~	Remote, self-contained
		Multiple compartments number ~~(for those units manufactured on or after January 1, 2012 only)~~	~~Yes, no~~
		Total Display Area (TDA)	
		~~Refrigerator Volume (for those units manufactured before January 1, 2012 only)~~	
		~~Freezer Volume (for those units manufactured before January 1, 2012 only)~~	
		Total Volume	
		Height	
		Width	
		Depth	
		Anti-condensate Energy Consumption (AEC) (for hybrid models and refrigerator-freezers)	

		Condensate Evaporator Pan Energy Consumption (PEC) (for hybrid models and refrigerator-freezers)	
		Defrost Energy Consumption (DEC) (for hybrid models and refrigerator-freezers)	
		Fan Energy Consumption (FEC) (for hybrid models and refrigerator-freezers)	
		Compressor Energy Consumption (CEC) (for hybrid models and refrigerator-freezers)	
		Lighting Energy Consumption (LEC) (for hybrid models and refrigerator-freezers)	
		Other Energy Consumption (OEC) (for hybrid models and refrigerator-freezers)	
		Daily Energy Consumption	
		Calculated Daily Energy Consumption (CDEC)	
		Total Daily Energy Consumption (TDEC)	
		Refrigerant Type	Ozone-depleting, non-ozone-depleting
		Insulation Type	Ozone-depleting, non-ozone-depleting
	Automatic Commercial Ice-Makers	Ice Maker Process Type	Batch, continuous, cube, other (specify)

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
B	Room Air Conditioners and Room Air-Conditioning Heat Pumps	*Voltage	
		*Electrical Phase	1, 3
		*Type	Room air conditioner, room air conditioning heat pump, casement-only room air conditioner, casement-slider room air conditioner.
		*Louvered Sides	Yes, no
		Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		~~Energy Efficiency Ratio (EER) at 95°F~~	
		Combined Energy Efficiency Ratio at 95°F ~~(required for models manufactured on or after June 1, 2014 only)~~	
		Standby and Off Mode Annual Energy Consumption	
		Heating Capability	Heat pump, electric resistance heating, heat pump and electric resistance heating, no heating capability
		~~Heating Capacity (for heat pumps only)~~	
		~~Electrical Input (for heat pumps only)~~	
		~~Coefficient of Performance (for heat pumps only)~~	
		~~Heating Capacity (for models with electric resistance heating only)~~	
		~~Electrical Input (for those with electric resistance heating)~~	
		Refrigerant Type[1]	Ozone-depleting, non-ozone-depleting
	Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps	*Voltage	
		*Electrical Phase	1, 3
		*Type	PTAC, PTHP
		Size	Standard, non-standard
		Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Heating Capability	Heat pump, electric resistance heating, heat pump and electric resistance heating, no heating capability
		Heating Capacity (for models with heating capability only)	
		Electrical Input (for models with heating capability only)	
		Coefficient of Performance (for models with heating capability only)	

		Refrigerant Type[1]	Ozone-depleting, non-ozone-depleting
		~~Indoor Fan Nominal Horsepower[1]~~	
		~~Indoor Fan Motor Type[1]~~	~~Premium, standard~~
		~~Outdoor Fan Nominal Horsepower[1]~~	
		~~Outdoor Fan Motor Type[1]~~	~~Premium, standard~~
		Compressor Power[1]	

* "Identifier" information as described in Section 1602(a).

1 = Voluntary for federally-regulated appliances

2 = Voluntary for state-regulated appliances

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Table X: Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Air Filters	Air filter sizes tested	Small, medium, and large
		Minimum Efficiency Reporting Value (MERV)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 N/A
		Particle Size Efficiency for 0.3 to 1.0 µm particle size	
		Particle Size Efficiency for 1.0 to 3.0 µm particle size	
		Particle Size Efficiency for 3.0 to 10.0 µm particle size	
		Test Procedure used to determine air filter efficiency performance	AHRI 680-2009, or ASHRAE 52.2-2012
		Air Filter Length	
		Air Filter Width	
		Air Filter Depth	
		Air Filter Face Area	
		Face Velocity Utilized for the test procedure	~~N/A for AHRI 680 or~~ V~~v~~alue in feet per minute ~~for ASHRAE 52.2~~ or N/A
		Airflow Rate value 1	
		Airflow Rate value 2	
		Airflow Rate value 3	
		Airflow Rate value 4	
		Airflow Rate value 5-Maximum Rated Airflow Rate	
		Initial Resistance at ~~400 cubic-feet-per-minute (cfm)~~ air flow rate value 1	Test results to one-hundredths of an Inch of Water Column
		Initial Resistance at ~~800 cubic-feet-per-minute (cfm)~~ airflow rate value 2	Test results to one-hundredths of an Inch of Water Column
		Initial Resistance at ~~1,200 cubic-feet-per-minute (cfm) unless maximum rated airflow rate (as published by the manufacturer) is less than 1,200 cfm~~ airflow rate value 3	Test results to one-hundredths of an Inch of Water Column
		Initial Resistance at ~~1,600 cubic-feet-per-minute (cfm) unless maximum rated airflow rate (as published by the manufacturer) is less than 1,600 cfm~~ airflow rate value 4	Test results to one-hundredths of an Inch of Water Column
		Initial Resistance at ~~2,000 cubic-feet-per-minute (cfm) or the maximum rated airflow rate as published by the manufacturer~~ airflow rate value 5	Test results to one-hundredths of an Inch of Water Column
		Final Resistance at ~~2,000 cubic-feet-per-minute (cfm) or the maximum rated airflow rate as published by the manufacturer~~ the point where test is terminated and results determined	Test results to one-hundredths of an Inch of Water Column
		Dust Holding Capacity at the maximum rated airflow rate as published by the manufacturer	Test results in multiples of one gram.
		Airflow Rate value determined at an Initial Resistance of 0.1 Inch of Water Column-~~Test Procedure used to determine air filter dust holding capacity~~	~~AHRI 680-2009, or ASHRAE 52.2-2012~~

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	All Central Air Conditioners and Central Air-Conditioning Heat Pumps	*Coil Model Number with which Compressor was Tested (for split systems only)	
		*Type	Air conditioner, heat pump (heating and cooling), heat pump (heating only), heat pump (cooling only)
		*Energy Source for Cooling	Electricity, natural gas
		*Energy Source for Heating	Gas, oil, electric heat pump, electric resistance, heat pump and electric resistance, none
		*ARI Classification	
		*Voltage	
		*Electrical Phase	1, 3
		Variable Refrigerant Flow	Yes, no
		Heat Recovery (for Variable Refrigerant Flow models only)	Yes, no
		Vertical Air Conditioner (for single package models only) (required on or after January 1, 2010)	Yes, no
		Refrigerant Type[1, 2]	Ozone-depleting, non-ozone-depleting
		Thermostatic Expansion Valve (for air-source or air-cooled models only)	Yes, no
		~~Thermostatic Expansion Valve (for air-source or air-cooled models only)[1, 2]~~	~~Exception 1, Exception 2, Exception 3 [See Section 1605.2(c)(1)(B)], no exception~~
		Compressor Motor Design	Single-speed, dual-speed, multiple-speed, variable-speed
		~~Compressor Motor Horsepower[1, 2]~~	
		~~Compressor Motor Type[1, 2]~~	~~Premium, standard~~
		~~Outdoor Fan Motor Design[1, 2]~~	~~Single-speed, dual-speed, multiple-speed, variable-speed~~
		~~Outdoor Fan Motor Nominal Horsepower[1, 2]~~	
		~~Outdoor Fan Motor Type[1, 2]~~	~~Premium, standard~~
		~~Outdoor Fan Motor Power Factor (for models with variable speed motors only)[1, 2]~~	
		~~Indoor Fan Motor Design[1, 2]~~	~~Single-speed, dual-speed, multiple-speed, variable-speed~~
		~~Indoor Fan Motor Nominal Horsepower[1, 2]~~	
		~~Indoor Fan Motor Type[1, 2]~~	~~Premium, standard~~
		~~Indoor Fan Motor Power Factor (for variable speed motors only)[1, 2]~~	

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Air-Cooled, Single Package CAC < 65,000 Btu/hour and Air-Cooled, Split System CAC < 65,000 Btu/hour	Seasonal Energy Efficiency Ratio (SEER)[3]	
		Cooling Capacity at 82°F[3]	
		Electrical Input at 82°F[3]	
		Degradation Coefficient at 82°F[3]	
		Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Average Off Mode Power Consumption (Watts) ~~(for models manufactured on or after January 1, 2015 only)~~	
		Space-constrained Product	Space-constrained; ~~through-the-wall~~ variable-speed mini-split; small duct, high velocity; not space-constrained
	Air-Source, Single Package Heat Pumps < 65,000 Btu/hour and Air-Source Split System Heat Pumps < 65,000 Btu/hour	Seasonal Energy Efficiency Ratio (SEER)	
		Cooling Capacity at 82°F[3]	
		Electrical Input at 82°F[3]	
		Degradation Coefficient at 82°F[3]	
		Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Average Off Mode Power Consumption (Watts)	
		Heating Seasonal Performance Factor (HSPF) [3]	
		Heating Capacity	
		Electrical Input	
		Coefficient of Performance (COP) at 47°F (single package vertical heat pumps only)	
		Space-constrained Product	Space-constrained~~; through-the-wall~~ variable-speed mini-split; small duct, high velocity; not space-constrained
	Air-Cooled, Single Package CAC ≥ 65,000 and < 760,000 Btu/hour Air-Cooled, Split System CAC ≥ 65,000 and < 760,000 Btu/hour	Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Integrated Part Load Value (IPLV) If Applicable	
		Heating System Type[1, 2]	Gas, oil, electric resistance, none

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances
3 = Voluntary for single package vertical air conditioners and single package vertical heat pumps only.

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Air-Source, Single Package Heat Pumps ≥ 65,000 Btu/hour and < 760,000 Btu/hour; and Air-Source, Split-System Heat Pumps ≥ 65,000 and < 760,000 Btu/hour	Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Integrated Part Load Value (IPLV) If Applicable	
		Heating Capacity at 47°F	
		Electrical Input at 47°F	
		Coefficient of Performance (COP) at 47°F	
		Heating Capacity at 17°F	
		Electrical Input at 17°F	
		Coefficient of Performance (COP) at 17°F	
	Evaporatively-Cooled Single Package CAC < 760,000 Btu/hour and Evaporatively-Cooled Split System CAC < 760,000 Btu/hour	Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Integrated Part Load Value (IPLV) If Applicable	
		Heating System Type[1, 2]	Gas, oil, electric resistance, none
	Water-Cooled Single-Package CAC < 760,000 Btu/hour and Water-Cooled, Split System CAC < 760,000 Btu/hour	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Cooling Capacity at 85°F Entering Water Temperature	
		Electrical Input at 85°F Entering Water Temperature	
		Energy Efficiency Ratio (EER) at 85°F Entering Water Temperature	
		Low Temperature EER at 70°F Entering Water Temperature (for models < 65,000 Btu/hour only)	
		Heating System Type[1]	Gas, oil electric resistance, none
	Water-Source, Single Package Heat Pumps < 760,000 Btu/hour and Water-Source Split System Heat Pumps < 760,000 Btu/hour	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Cooling Capacity at 86°F Entering Water Temperature	

		Electrical Input at 86°F Entering Water Temperature	
		Energy Efficiency Ratio (EER) at 86°F Entering Water Temperature	
		Heating Capacity at 68°F Entering Water Temperature	
		Electrical Input at 68°F Entering Water Temperature	
		Coefficient of Performance (COP) at 68°F Entering Water Temperature	

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances
3 = Report both fields for split systems; either indoor or outdoor fan electrical input (not both) for single package models.

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Ground Water-Source, Single Package Heat Pumps and Ground Water-Source Split System Heat Pumps	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Cooling Capacity at 59°F Entering Water Temperature (for all sizes, including but not limited to models ≥ 240,000 Btu/hour)	
		Electrical Input at 59°F Entering Water Temperature (for all sizes, including but not limited to models ≥ 240,000 Btu/hour)	
		Energy Efficiency Ratio (EER) at 59°F Entering Water Temperature (for all sizes, including but not limited to models ≥ 240,000 Btu/hour)	
		Heating Capacity at 50°F Entering Water Temperature (for all sizes, including but not limited to models ≥ 240,000 Btu/hour)	
		Electrical Input at 50°F Entering Water Temperature (for all sizes, including but not limited to models ≥ 240,000 Btu/hour)	
		Coefficient of Performance (COP) at 50°F Entering Water Temperature (for all sizes, including but not limited to models ≥ 240,000 Btu/hour)	
	Ground-Source, Closed-Loop, Single Package Heat Pumps and Ground-Source, Closed-Loop, Split System Heat Pumps	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)[3]	
		Cooling Capacity at 77°F Entering Brine Temperature	
		Electrical Input at 77°F Entering Brine Temperature	
		Energy Efficiency Ratio (EER) at 77°F Entering Brine Temperature	
		Heating Capacity at 32°F Entering Brine Temperature	
		Electrical Input at 32°F Entering Brine Temperature	
		Coefficient of Performance (COP) at 32°F Entering Brine Temperature	

* "Identifier" information as described in Section 1602(a).

1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances
3 = Report both fields for split systems; either indoor or outdoor fan electrical input (not both) for single package models.

Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Gas-Fired Air Conditioners and Gas-Fired Heat Pumps	Cooling Capacity – (cooling bin summary)	
		Gas Input While Cooling – (cooling bin summary)	
		Electric Input While Cooling – (cooling bin summary)	
		Cooling COP – Gas	
		Cooling COP – Electric	
		Heating Output – (heating bin summary)	
		Gas Input While Heating – (heating bin summary)	
		Electric Input While Heating – (heating bin summary)	
		Heating COP – Gas	
		Heating COP – Electric	
	Computer Room Air Conditioners	Equipment Type	Air-cooled, water-cooled, water-cooled with a fluid economizer, glycol-cooled, glycol-cooled with a fluid economizer, evaporatively cooled; chilled-water-cooled
		Net Sensible Cooling Capacity (air-cooled, water-cooled, glycol-cooled, chilled-water-cooled models only)	
		Downflow Unit Power Input (watts) (air-cooled, water-cooled, glycol-cooled, chilled-water-cooled models only)	
		Downflow Unit SCOP (air-cooled, water-cooled, glycol-cooled, chilled-water-cooled models only)	
		Upflow Unit Power Input (watts) (air-cooled, water-cooled, glycol-cooled, chilled-water-cooled models only)	
		Upflow Unit SCOP (air-cooled, water-cooled, glycol-cooled, chilled-water-cooled models only)	
		Cooling Capacity at 95°F (evaporatively cooled models only)	
		Electrical Input at 95°F *(evaporatively cooled models only)	
		Energy Efficiency Ratio (EER) at 95°F (evaporatively cooled models only)	

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances

Table X – Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Heat pump water-chilling packages	Voltage*	
		Phase*	1, 3
		Refrigerant Type*	Ozone-depleting, non-ozone-depleting
		Compressor Motor Design*	Single-speed, dual-speed, multiple-speed, variable-speed
		OD Fan Motor Design*	Single-speed, dual-speed, multiple-speed, variable-speed
		Model number includes all components?	Yes, no
		Is the model designed for space cooling?	Yes, no
		Cooling Capacity (BTU per hour) if applicable	
		Cooling power input (watts) if applicable	
		Energy Efficiency Ratio (EER) if applicable	
		Integrated part load value (IPLV)	
		Heating Capacity (BTU per hour) at 47°F	
		Heating power input (watts) at 47°F	
		Coefficient of Performance (COP) at 47°F	
		Heating Capacity (BTU per hour) at 17°F	
		Heating power input (watts) at 17°F	
		Coefficient of Performance (COP) at 17°F	
		Heat Capacity (BTU per hour) of heat reclaim[2]	
		COPR of heat reclaim[2]	

* "Identifier" information as described in Section 1602(a)
1 = Voluntary for federally regulated appliances
2 = Voluntary for state-regulated appliance

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
D	Dehumidifiers		
		Product capacity (pints per day)	
		Energy Factor	
	Residential Furnace Fans	Furnace Fan Type	Non-weatherized, non-condensing gas (NWG-NC); Non-weatherized, condensing gas (NWG-C); Weatherized non-condensing gas (WG-NC); Non-weatherized, non-condensing oil (NWO-NC); Non-weatherized electric furnace/ modular blower fan (NWEF/NWMB); Mobile home non-weatherized, non-condensing gas (MH-NWG-NC); Mobile home non-weatherized, condensing gas (MH-NWG-C); Mobile home electric furnace/modular blower fan (MH-EF/MB); Mobile home non-weatherized oil (MG-NOW); Mobile home weatherized gas
		Wattage	
		Airflow at the maximum airflow-control setting (in cfm)	
		Fan Energy Rating (FER)	

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
G	Other Pool Heaters	Energy Source	Natural gas, LPG, oil, electric resistance
		~~Readily accessible on-off switch~~	~~Yes, no~~
		Constant Burning Pilot Light (for gas models)	Yes, no
		Input	
		Thermal Efficiency	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
G	Residential Pool Pump and Motor Combinations and Replacement Residential Pool Pump Motors	Motor Construction	PSC, Capacitor Start-Capacitor Run, ECM, Capacitor Start-induction run, split-phase
		Motor Design	Single-speed, dual-speed, multi-speed, variable-speed
		Frame	
		Speed (in RPM)	
		Motor has Capability of Operating at Two or More Speeds with the Low Speed having a Rotation Rate that is No More than One-Half of the Motor's Maximum Rotation Rate	Yes, no
		Unit Type	Residential Pool Pump and Motor Combination, Replacement Residential Pool Pump Motor
		Pool Pump Motor Capacity	
		Motor Service Factor	
		Motor Efficiency (%)	
		Nameplate Horsepower	
		Pump Control Speed (compliance with Section 1605.3(g)(5)(B)~~3~~2	Yes, no
		Flow for Curve 'A' (in gpm)	
		Power for Curve 'A' (in watts)	
		Energy Factor for Curve 'A' (in gallons per watt-hour)	
		Flow for Curve 'B' (in gpm)	
		Power for Curve 'B' (in watts)	
		Energy Factor for Curve 'B' (in gallons per watt-hour)	
		Flow for Curve 'C' (in gpm)	
		Power for Curve 'C' (in watts)	
		Energy Factor for Curve 'C' (in gallons per watt-hour)	

* "Identifier" information as described in Section 1602(a).
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2 = Voluntary for state-regulated appliances

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Table X Continued − Data Submittal Requirements

	Appliance	*Required Information*	*Permissible Answers*
J	Fluorescent Lamp Ballasts	*Ballast Input Voltage	120, 277, between 120 and 277, other (specify)
		*Number of Lamps	
		*Type of Fluorescent Lamp	F34T12, ~~F40T12, F96T12,~~ F96T12/ES, ~~F96T12HO,~~ F96T12HO/ES, ~~other T12 (specify), T5, T8, other (specify)~~ 2-foot U-shaped, 4-foot medium bipin, 4-foot miniature bipin high output, 4-foot miniature bipin standard output, 8-foot high output, 8-foot slim line
		~~Designed for Dimming~~Product Class (from U.S. DOE CCMS product template)	~~Continuous, stepped, no~~
		*Building Application	~~Designed but not labeled for use only in residential buildings, designed and labeled for use only in residential buildings,~~ commercial, designed (not classified as sign ballasts) to operate 8-foot high output lamps, designed and labeled as sign ballasts to operate 8-foot high output lamps, residential; not classified as residential, other
		*Start	Instant, programmed, rapid
		Ballast Frequency	High frequency, low frequency, other
		Designed for Dimming to 50% or Less of Maximum Output	Yes, no
		Circuit Design	Cathode cut-out, electronic, magnetic
		Power Factor	
		~~Designed for Use in Ambient Temperatures of ≤ 0°F~~Sign Ballast	Yes, no
		~~Designed for Use (a) at Ambient Temperatures ≤ -20°F and (b) in an Outdoor Sign (for models with two F96T12HO lamps only)~~	~~Yes, no~~
		~~Replacement Ballast as Defined in Section 1602(j)~~	~~Yes, no~~
		~~Maximum~~ Input Power Watts	
		~~Minimum Input Watts~~	
		Average Total Lamp Arc Power	
		Ballast ~~Efficacy Factor~~ Luminous Efficiency	
		~~Relative Light Output~~	

J	Deep-Dimming Fluorescent Lamp Ballasts	*Ballast Input Voltage	120, 277, other (specify)
		*Number of Lamps	
		*Lamp type	T5, T8, other (specify)
		*Dimming Type	Continuous, stepped, individual lamp control, other (specify)
		*Control Type	3-wire, 0-10 volts, digital communication, phase, other (specify)
		*Start Type	Instant start, rapid start, program start, other (specify)
		P_{100}	
		Arc Power 100	
		P_{80}	(answer NA if not applicable)
		Arc Power 80	(answer NA if not applicable)
		P_{50}	(answer NA if not applicable)
		Arc Power 50	(answer NA if not applicable)
		BLE 100	
		BLE 80	(answer NA if not applicable)
		BLE 50	(answer NA if not applicable)
		P_0 (standby mode power)	
		~~Integrated~~Weighted Ballast Luminous Efficacy	
		Power Factor	

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally regulated appliances
2 = Voluntary for state-regulated appliances

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
Q	Clothes Dryers	*Energy Source	Gas, electric
		*Drum Capacity	
		*Voltage	120, 240, other (specify)
		Combination Washer/Dryer[1]	Yes, no
		~~Automatic Termination Control[1]~~ Venting	~~Yes, no~~ Vented, ventless
		~~Energy Factor (through December 31, 2014)~~	
		Combined Energy Factor ~~(required only on and after January 1, 2015)~~	
		Constant Burning Pilot Light (Gas models only)	Yes, no

* "Identifier" information as described in Section 1602(a).
1 = Voluntary for federally-regulated appliances
2 = Voluntary for state-regulated appliances

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Note: Authority cited: Sections 25213, 25218(e), 25401(d), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c), 25402.5.4 and 25960, Public Resources Code.

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Section 1607. Marking of Appliances.

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(d) Energy Performance Information.

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(8) External Power Supplies.

(A) Any federally regulated external power supply 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, version 1.1' published by the Environmental Protection Agency~~ International Efficiency Marking Protocol for External Power Supplies, Version 3.0, September 2013.

(B) Any state-regulated external power supply complying with the requirements of Section 1605.3(u) 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, version 1.1' published by the Environmental Protection Agency~~ International Efficiency Marking Protocol for External Power Supplies, Version 3.0, September 2013.

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(12) Air Filters.

Each unit of air filters manufactured on or after ~~June~~July 1, 2016 shall be marked, permanently and legibly, on an accessible and conspicuous place on the edge of the filter itself or on the pleats, in characters of font size 12, with the ~~following~~ information specified in either section (A) or (B) below as applicable to the air filter model:

(A) Air filters for which the reported information is determined in accordance with the AHRI standard 680-2009 shall be marked with the following information:

1. ~~the MERV p~~Particle size efficiency (PSE) ~~ratings~~ of the unit ~~and~~in three particle size ranges: 0.3-1.0, 1.0-3.0, 3.0-10 micrometers (μm).
2. ~~i~~Initial resistance ~~at 400 cfm, 800 cfm, 1200 cfm, 1600 cfm, and either 2000cfm or maximum rated airflow rate,~~ for the range of airflow rates as published by the manufacturer, including the maximum rated airflow rate. The selected airflow rates shall be in multiples of 400 cfm. If the maximum rated airflow rate is not a multiple of 400 cfm, then report initial resistance at multiples of 400 cfm, and any fraction thereof, to include the maximum rated airflow rate as described in subsections a, b, c, d, e below.

a. Airflow Rate Value 1 (val 1) = 400 cubic-feet-per-minute (cfm).If 400 cfm is not within the manufacturer's published range of airflow rates for the filter, value = N/A.

b. Airflow Rate Value 2 (val 2) = 800 cubic-feet-per-minute (cfm). If 800 cfm is not within the manufacturer's published range of airflow rates for the filter, value = N/A.

c. Airflow Rate Value 3 (val 3) = 1200 cubic-feet-per-minute (cfm).If 1200 cfm is not within the manufacturer's published range of airflow rates for the filter, value = N/A.

d. Airflow Rate Value 4 (val 4) = 1600 cubic-feet-per-minute (cfm). If 1600 cfm is not within the manufacturer's published range of airflow rates for the filter, value = N/A

e. Airflow Rate Value 5 (val 5) = Maximum Rated Airflow Rate (cfm)

3. ~~The particle size efficiency rating used for this label shall be the particle size efficiency of 3.0 to 10.0 micron particles. Manufacturers may include both the MERV and particle size efficiency rating. If either MERV or particle size efficiency ratings have not been reported, m~~Mark the non-reported ~~ratings~~MERV information field as "N/A."

(B) Air filters for which reported information is determined in accordance with ASHRAE Standard 52.2-2012 shall be marked with the following information:

1. Particle size efficiency (PSE) of the unit in three particle size ranges: 0.3-1.0, 1.0-3.0, 3.0-10 micrometers (μm).

2. Initial resistance for the range of airflow rates as published by the manufacturer, including the maximum rated airflow rate. The airflow rate values shall be the maximum rated airflow rate, and the values for 50%, 75%, 100% and 125% of the test airflow rate value determined in accordance with ASHRAE 52.2-2012. as described in subsections a, b, c, d, e below.

a. Airflow Rate Value 1 (val 1) = 50% of the test airflow rate in cubic-feet-per-minute (50% of airflow rate value 3).

b. Airflow Rate Value 2 (val 2) = 75% of the test airflow rate in cubic-feet-per-minute (75% of airflow rate value 3).

c. Airflow Rate Value 3 (val 3) = 100% test airflow rate in cubic-feet-per-minute; determined as equal to selected test face velocity (feet per minute) multiplied by the air filter face area (square feet).

d. Airflow Rate Value 4 (val 4)= 125% of the test airflow rate in cubic-feet-per-minute (125% of airflow rate value 3

e. Airflow Rate Value 5 (val 5) = Maximum Rated Airflow Rate (cfm)

3. Minimum Efficiency Reporting Value (MERV).

The information shall be disclosed in the format in Table Z.

Table Z
Sample Air Filter Marking

~~MERV~~	~~PSER (um)~~	~~Airflow Rate (CFM)~~	~~400~~	~~800~~	~~1200~~	~~1600~~	~~2000*~~	~~*Max Rated Airflow~~
~~[value]~~	~~[value]~~	~~Initial Resistance (IWC)~~	~~[value]~~	~~[value]~~	~~[value]~~	~~[value]~~	~~[value]~~	

MERV	(µm) PSE (%)	0.30-1.0	1.0-3.0	3.0-10	Airflow Rate (CFM)	[val 1]	[val 2]	[val 3]	[val 4]	[val 5]	*Max Rated Airflow
[value]		[value]	[value]	[value]	Initial Resistance (IWC)	[value]	[value]	[value]	[value]	[value]	

If the marking on the air filter is not legible through its retail packaging, then the packaging shall also be labeled with the same information and in the same format as Table Z. The requirements of this section shall not preclude manufacturers from providing additional information.

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The following documents are incorporated by reference in Section 1607.

Number	*Title*
FEDERAL MARKING REQUIREMENTS	
C.F.R., Title 16, part 305	
Copies available from:	Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402 http://ecfr.gpoaccess.gov/
	International Efficiency Marking Protocol for External Power Supplies, Version 3.0, September 2013 ~~Energy Star Program Requirements for Single Voltage External AC-DC and AC-AC Power Supplies, version 1.1~~

Copies available from:

~~US EPA~~
~~Climate Protection Partnership~~
~~ENERGY STAR Programs Hotline & Distribution (MS-6202J)~~
~~1200 Pennsylvania Ave NW~~
~~Washington, DC 20460~~
~~www.energystar.gov~~

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Forrestal Building, Mail Station EE–2J, 1000 Independence Avenue, SW., Washington, DC 20585–0121

http://www.regulations.gov/contentStreamer?documentId=EERE-2008-BT-STD-0005-0218&disposition=attachment&contentType=pdf

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Note: Authority cited: Sections 25213, 25218(e), 25402(a)-(c) and 25960, Public Resources Code. Reference: Sections 25216.5(d), 25402(a)-(c) and 25960, Public Resources Code.