2012 APPLIANCE EFFICIENCY REGULATIONS

CALIFORNIA ENERGY COMMISSION
Edmund G. Brown Jr., Governor

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ENERGY COMMISSION

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ABSTRACT

The current *Appliance Efficiency Regulations*, (California Code of Regulations, Title 20, Sections 1601 through 1608), dated September 2012, contain amendments that were adopted by the California Energy Commission on January12, 2012, and replaced all previous versions. The official version of these regulations is published by the Office of Administrative Law.

The *Appliance Efficiency Regulations* include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment.

Keywords: *Appliance Efficiency Regulations*, appliance standards, refrigerators, air conditioners, space heaters, water heaters, pool heaters, pool pumps, electric spas, pool pump motors, plumbing fittings, plumbing fixtures, showerheads, spray valves, faucets, tub spout diverters, water closets, urinals, ceiling fans, ceiling fan light kits, dehumidifiers, fluorescent lamp ballasts, lamps, general purpose lighting, emergency lighting, self contained lighting controls, exit signs, traffic signal modules, traffic signal lamps, luminaires, torchieres, portable lighting fixtures, metal halide luminaires, high intensity discharge fixtures, HID fixtures, under-cabinet luminaires, dishwashers, clothes washers, clothes dryers, cooking products, food service equipment, electric motors, low-voltage dry-type distribution transformers, external AC to DC and AC to AC power supplies, consumer electronics, consumer audio and video equipment, televisions, compact audio products, digital versatile disc players, digital versatile disc recorders, digital television adapters, large and small battery charger systems.

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CALIFORNIA CODE OF REGULATIONS, TITLE 20: DIVISION 2, CHAPTER 4, ARTICLE 4, SECTIONS 1601-1608: APPLIANCE EFFICIENCY REGULATIONS

Section 1601. Scope.

This Article applies to the following types of new appliances, if they are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment. Each provision applies only to units manufactured on or after the effective date of the provision.

Note: For the applicability of these regulations to appliances installed in new building construction, see Sections 110 and 111 of Part 6 of Title 24 of the California Code of Regulations.

(a) Refrigerators, refrigerator-freezers, and freezers that can be operated by alternating current electricity, including but not limited to refrigerated bottled or canned beverage vending machines, automatic commercial ice-makers, refrigerators with or without doors, freezers with or without doors, walk-in coolers, walk-in freezers, and water dispensers, but excluding the following types:

(1) consumer products with total refrigerated volume exceeding 39 ft^3;

(2) commercial refrigerators, commercial refrigerator-freezers, and commercial freezers with total refrigerated volume exceeding 85 ft^3; except that walk-in coolers and walk-in freezers are not excluded;

(3) blast chillers; and

(4) automatic commercial ice makers with a harvest rate less than 50 lbs./24 hours and automatic commercial ice makers with a harvest rate greater than 2500 lbs./24 hours.

(b) Room air conditioners, room air-conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

(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.

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

(e) Vented gas space heaters and vented oil space heaters, vented and unvented infrared gas heaters, electric residential boilers, and gas-fired combination space-heating and water-heating appliances.

Note: See Health and Safety Code Section 19881 for restrictions on the sale of unvented gas space heaters and unvented oil space heaters.

(f) Water heaters, including but not limited to hot water supply boilers.

(g) Gas pool heaters, oil pool heaters, electric resistance pool heaters, heat pump pool heaters, residential pool pump and motor combinations, replacement residential pool pump motors, and portable electric spas.

(h) Plumbing fittings, which are showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, tub spout diverters, and commercial pre-rinse spray valves.

(i) Plumbing fixtures, which are water closets and urinals.

(j) Fluorescent lamp ballasts that are designed to:

(1) operate at nominal input voltages of 120 or 277 volts,

(2) operate with an input current frequency of 60 Hertz, and

(3) be used with T5, T8, or T12 lamps; and mercury vapor lamp ballasts.

(k) Lamps, which are federally-regulated general service fluorescent lamps, federally-regulated incandescent reflector lamps, state-regulated general service incandescent lamps, general service lamps, and includes GU-24 base lamps.

(l) Emergency lighting, which is illuminated exit signs, and self-contained lighting controls.

(m) Traffic signal modules and traffic signal lamps.

(n) Luminaires, which are torchieres, metal halide luminaires, portable luminaires, under-cabinet luminaires, and includes luminaires with GU-24 socket and base configurations and GU-24 adaptors.

(o) Dishwashers that are federally-regulated consumer products.

(p) Clothes washers that are federally-regulated consumer products; and commercial clothes washers.

(q) Clothes dryers that are federally-regulated consumer products.

(r) Cooking products that are federally-regulated consumer products; and food service equipment.

(s) Electric motors, excluding definite purpose motors, special purpose motors, and motors exempted by the U.S. Department of Energy under 42 U.S.C. Section 6313(b).

(t) Low voltage dry-type distribution transformers that are designed to operate at a frequency of 60 Hertz, and that have a rated power output of not less than 15 kVa.

(u) Power supplies, which are single voltage external AC to DC and AC to AC power supplies included with other retail products, and single voltage external AC to DC or AC to AC power supplies sold separately, excluding power supplies that are classified as devices for human use under the Federal Food, Drug, and Cosmetic Act and require U.S. Food and Drug Administration listing and approval as a medical device.

(v) Televisions with a screen area not greater than 1,400 square inches, and consumer audio and video equipment, which are compact audio products, digital versatile disc players, and digital versatile disc recorders.

(w) Battery charger systems, except those:

(1) used to charge a motor vehicle that is powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electrical current, and which may include a nonelectrical source of power designed to charge batteries and components thereof. This exception does not apply to autoettes, electric personal assistive mobility devices, golf carts, or low speed vehicles, as those vehicles are defined in Division 1 of the California Vehicle Code;

(2) that are classified as Class II or Class III devices for human use under the Federal Food, Drug, and Cosmetic Act and require U.S. Food and Drug Administration listing and approval as a medical device;

(3) used to charge a battery or batteries in an illuminated exit sign, as defined in Section 1602(*l*);

(4) with input that is three phase of line-to-line 300 volts root mean square or more and is designed for a stationary power application;

(5) that are battery analyzers; or

(6) that are voltage independent or voltage and frequency independent uninterruptible power supplies as defined by IEC 62040-3 ed.2.0 (March 2011).

The following standards are incorporated by reference in Section 1602.

Number	Title
INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)	
IEC 62040-3 ed.2.0 (March 2011)	Uninterruptible Power Systems
Copies available from:	International Electrotechnical Commission 3, rue de Varembé P.O. Box 131 CH – 1211 Geneva 20 Switzerland http://www.iec.ch Phone: +41 22 919 02 11 FAX: +41 22 919 03 00

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.

In this Article the following definitions apply. If a term is not defined here, the applicable definition in NAECA, EPAct, EISA, or the test methods listed in Section 1604 shall apply where it is reasonable to do so.

"AC" means alternating current.

"Accessible place" means a place on an appliance that can be easily seen without the need for tools to remove any covering.

"Active mode" means a condition in which an energy-using product

(1) is connected to a main power source;

(2) has been activated; and

(3) provides one or more main functions.

"AHAM" means the Association of Home Appliance Manufacturers.

"AHRI" means the Air-Conditioning, Heating, and Refrigeration Institute.

"ANSI" means the American National Standards Institute.

"Approved industry certification program" means an appliance certification program that the Executive Director has determined, pursuant to Section 1603(b):

(1) is operated by an appliance manufacturer trade association or other entity approved by the Executive Director;

(2) is accredited by ANSI or ISO, or has received from a nationally-recognized entity an approval that provides substantially similar guarantees of substantive and procedural reliability and accuracy; and

(3) provides:

(A) an internet-accessible listing of appropriate energy performance information that is updated at least every 6 months;

(B) testing of appliances according to applicable test methods and accurate reporting of test results;

(C) listings that:

1. include no appliance not meeting an applicable federal standard,

2. clearly and distinctly indicate which appliances meet the applicable federal standard but do not meet an applicable California standard, which shall be identified, and

3. where there is no federal standard, clearly and distinctly indicate which appliances do not meet an applicable California standard which shall be identified; and

(D) verification of manufacturer-submitted data;

(E) an appropriate procedure for program participants to challenge listed information; and

(F) compatibility with the database described in Section 1606(c).

"ASHRAE" means the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

"ASME" means the American Society of Mechanical Engineers, International.

"Ballast" means a device used with an electric discharge lamp to obtain necessary circuit conditions (voltage, current and waveform) for starting and operating.

"Ballast efficacy factor" means the ratio of the relative light output to the power input of a fluorescent lamp ballast, as determined using the applicable test method in Section 1604(j).

"Basic model" of a federally-regulated consumer product means "basic model" as defined in 10 CFR Section 430.2 (2008). "Basic model" of any other appliance means all units of a given type of appliance (or class thereof) that are manufactured by one manufacturer, that have the same primary energy source, and that do not have any differing electrical, hydraulic, physical, or functional characteristics that affect energy consumption.

"Basic model" of a federally-regulated electric motor, as defined in 10 CFR Section 431.12 (2008), means all units of a given type of electric motor (or class thereof) manufactured by a single manufacturer, and which have the same rating, have electrical characteristics that are essentially identical, and do not have any differing physical or functional characteristics which affect energy consumption or efficiency. For the purpose of this definition, "rating" means one of the 113 combinations of an electric motor's horsepower (or standard kilowatt equivalent), number of poles, and open or enclosed construction, with respect to which 10 CFR Section 431.25 (2008) prescribes nominal full load efficiency standards.

"Basic model" of a distribution transformer, as defined in 10 CFR 431.92 (2008), means a group of models of distribution transformers manufactured by a single manufacturer, that have the same insulation type (i.e., liquid-immersed or dry-type), have the same number of phases (i.e., single or three), have the same standard kVA rating, and do not have any differentiating electrical, physical, or functional features that affect energy consumption. Differences in voltage and differences in basic impulse insulation level (BIL) rating are examples of differentiating electrical features that affect energy consumption.

"Btu" means British thermal unit.

"°C" means degrees Celsius.

"cfm" means cubic feet per minute.

"CFR" means Code of Federal Regulations.

"CIE" means the International Commission on Illumination.

"Color rendering index (CRI)" means the measured degree of color shift objects undergo when illuminated by a light source as compared with the color of those same objects when illuminated by a reference source of comparable color temperature, as determined using the applicable test method in Section 1604(k).

"Commission" means the California Energy Commission.

"Consumer product" means any article, other than an automobile, as defined in 49 U.S.C. Section 32901(a)(3):

(1) of a type which in operation consumes, or is designed to consume, energy or, with respect to showerheads, faucets, water closets, and urinals, water; and which, to any significant extent, is distributed in commerce for personal use or consumption by individuals;

(2) without regard to whether such article of such type is in fact distributed in commerce for personal use or consumption by an individual, except that such term includes fluorescent lamp ballasts, general service fluorescent lamps, incandescent reflector lamps, showerheads, faucets, water closets, and urinals distributed in commerce for personal or commercial use or consumption.

"CSA" means CSA International, which is also known as Canadian Standards Association International.

"Database" means the database established pursuant to Section 1606(c).

"Date of sale" means the day when the appliance is physically delivered to the buyer.

"DC" means direct current.

"Design standard" means a prescriptive standard, such as a ban on constant burning pilots or a requirement that a clothes washer have a particular feature.

"Directory" means a directory, a supplement thereto, or a part of a directory or supplement.

"EISA" means the Energy Independence and Security Act of 2007.

"Electric resistance heating" means the production of heat by passing electric current through a resistive element.

"Electronic ballast" means a device that uses semiconductors as the primary means to control lamp starting and operation.

"Energy efficiency standard" means a performance standard expressed in numerical form, such as energy factor, EER, or thermal efficiency.

"EPAct" means the Energy Policy Act of 1992, 42 U.S.C. Section 6311 et seq.

"Executive Director" means the Executive Director of the Commission or his or her designee.

"°F" means degrees Fahrenheit.

"Federally-regulated appliance" means an appliance that is federally-regulated commercial and industrial equipment or a federally-regulated consumer product.

"Federally-regulated commercial and industrial equipment" means commercial and industrial equipment for which there exists a test method and an energy conservation standard prescribed by or under EPAct.

"Federally-regulated consumer product" means a consumer product for which there exists a test method and an energy conservation standard prescribed by or under NAECA.

"fpm" means feet per minute.

"FSTC" means Pacific Gas and Electric Company's Food Service Technology Center.

"Gallon (g)" means U.S. liquid gallon.

"Gas" means natural gas or liquefied petroleum gas.

"gpm" means gallons per minute.

"HI" means the Hydraulic Institute.

"HI-A" means the Hydronics Institute Section of AHRI.

"High intensity discharge (HID) lamp" means an electric-discharge lamp in which:

(1) the light-producing arc is stabilized by bulb wall temperature; and

(2) the arc tube has a bulb wall loading in excess of 3 Watts/cm^2, including such lamps that are mercury vapor, metal halide, and high-pressure sodium lamps.

"HP" means horsepower.

"IAPMO" means the International Association of Plumbing and Mechanical Officials.

"Identifiers", when referenced in relation to Table X data submittal requirements, means those fields shown in Table X for each specific appliance type that, when taken in combination for a specific model of a specific appliance type, represent the criteria for designating a model. At a minimum, each specific appliance type's model "identifiers" will include (a) manufacturer, (b) brand, and (c) model number. Individual appliance types may include additional fields as identifiers. All identifiers are represented in Table X by an asterisk ("*"). For purposes of compliance with Section 1606(e)(1), the identifiers represent fields that cannot be modified.

"ISO" means the International Organization for Standardization.

“kW” means kilowatt.

“kWh” means kilowatt-hour.
“Light emitting diode (LED)” means a p-n junction solid state device, the radiated output of which is a function of the physical construction, material used, and exciting current of the device. The output of a light-emitting diode may be in:

(1) the infrared region;
(2) the visible region; or
(3) the ultraviolet region.

“LPG” or “LP-gas” means liquefied petroleum gas, and includes propane, butane, and propane/butane mixtures.

“LPW” (lumens per watt) means “average lamp efficacy (LPW)” as defined in Section 1602(k) of this Article.

“Luminaire” means a complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.

“Manufacturer” means any person engaged in the original production or assembly of an appliance. For plumbing fittings, federally-regulated general service fluorescent lamps, federally-regulated incandescent reflector lamps, and state-regulated general service incandescent lamps, “manufacturer” also means a private brand packager or reassembler.

“Model” means any collection of appliance units to which the manufacturer has assigned the same model number.

“Model number” means a combination of letters, digits, or characters representing the manufacturer, brand, design, or performance of an appliance. In the case of electric motors, "model number" refers to the designation of a "basic model", as defined in 10 CFR Section 431.12 (2008), in a manner specified by the Executive Director.

“NAECA” means the National Appliance Energy Conservation Act, 42 U.S.C. Section 6291 et seq.

“NEMA” means the National Electrical Manufacturers Association.

“Non-federally-regulated appliance” means an appliance that is neither federally-regulated commercial and industrial equipment nor a federally-regulated consumer product.

“NSF International” means the National Sanitation Foundation, International.
“OSA” means the Optical Society of America.

“Other mobile equipment” means transportation machinery including but not limited to cars, trucks, trains, airplanes, boats, and buses, but excluding mobile homes and manufactured homes.

"Ozone-depleting substance" means any substance that has been found by the United States Environmental Protection Agency to act as a catalyst in the breaking down of ozone, O_3, into molecular oxygen, O_2.

"Performance standard" means a standard that specifies a minimum level of energy or water efficiency or a maximum level of energy or water consumption of an appliance.

"Power factor" means the ratio of the real power to the apparent power.

"Private brand packager" means any person or entity that buys products from a manufacturer, packages them using its own brand name, and distributes them for sale using its own brand name.

"Reassembler" means any person or entity that buys products from a manufacturer, modifies them, and distributes them for sale using its own brand name.

"Recreational vehicle" means a van or utility vehicle used for recreational purposes.

"RPM" means revolutions per minute.

"Secretary" means the Secretary of the United States Department of Energy (U.S. DOE).

"Stand-by mode" means the condition in which an energy-using product:

(1) is connected to a main power source; and

(2) offers one or more of the following user-oriented or protective functions:

(A) To facilitate the activation or deactivation of other functions (including active mode) by remote switch (including remote control), internal sensor, or timer.

(B) Continuous functions, including information or status displays (including clocks) or sensor-based functions.

"Statement," as used in Section 1606, means a single and complete line of data for a specific model and end-use, containing all the data required in Table X for that appliance type.
"UL" means Underwriters Laboratories, Inc.

"UPS" means uninterruptible power supply.

"U.S.C." means the United States Code.

"UUT" means unit under test.

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

"Adjusted total volume" means the sum of (i) the fresh food compartment volume as defined in HRF-1-1979 in cubic feet, and (ii) the product of an adjustment factor and the net freezer compartment volume as defined in HRF-1-1979, in cubic feet.

"All-refrigerator" means an electric refrigerator which does not include a compartment for the freezing and long time storage of food at temperatures below 32°F. (0.0°C.). It may include a compartment of 0.50 cubic feet capacity (14.2 liters) or less for the freezing and storage of ice.

"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 under conditions of high ambient humidity.

"Automatic commercial ice-maker" means a factory-made assembly that is shipped in one or more packages that consists of a condensing unit and ice-making section operating as an integrated unit, that makes and harvests ice, and that may store or dispense ice.

"Automatic defrost system" or "automatic defrost" means a system in which the defrost cycle is automatically initiated and terminated, with resumption of normal refrigeration at the conclusion of the defrost operation. The system automatically prevents the permanent formation of frost on all refrigerated surfaces. Nominal refrigerated food temperatures are maintained during the operation of the automatic defrost system.

"Blast chiller" means a refrigerator designed to cool food products from 140°F to 40°F within four hours.

"Bottle-type water dispenser" means a water dispenser that uses a bottle or reservoir as the source of potable water.

"Buffet table" means a commercial refrigerator, such as a salad bar, that is designed with mechanical refrigeration and that is intended to receive refrigerated food, to maintain food product temperatures, and for customer service.

"Chest freezer" means a freezer to which access is gained through a top-opening door.

"Commercial refrigerator, commercial freezer, or commercial refrigerator-freezer" means refrigeration equipment that:

(1) is not a federally regulated consumer product, within the meaning of 10 CFR Part 430, Section 430.2 (2008);
(2) is not designed and marketed exclusively for medical, scientific, or research purposes;
(3) operates at a chilled, frozen, combination chilled and frozen, or variable temperature;
(4) displays or stores merchandise and other perishable materials horizontally, semi-vertically, or vertically;
(5) has transparent or solid doors, sliding or hinged doors, a combination of hinged, sliding, transparent, or solid doors, or no doors;
(6) is designed for pull-down temperature applications or holding temperature applications; and
(7) is connected to a self-contained condensing unit or to a remote condensing unit.

"Compact freezer" means a freezer that has total volume less than 7.75 ft^3 rated volume, as determined using 10 CFR, Part 430, Appendix B1 of Subpart B (2008), and that is 36 inches or less in height.

"Compact refrigerator" means a refrigerator that has total volume less than 7.75 ft^3 rated volume, as determined using 10 CFR, Part 430, Appendix A1 of Subpart B (2008), and that is 36 inches or less in height.
"Compact refrigerator-freezer" means a refrigerator-freezer that has total volume less than 7.75 ft^3 rated volume, as determined using 10 CFR, Part 430, Appendix A1 of Subpart B (2008), and that is 36 inches or less in height.

"Cube type ice" means ice that is fairly uniform, hard, solid, usually clear, and generally weighs less than two ounces (60 grams) per piece, as distinguished from flake, crushed, or fragmented ice.

"Drawer unit" means a residential refrigerator, residential freezer, or residential refrigerator-freezer, one or more of whose externally-accessed compartments are drawers.

"Envelope" of a walk-in cooler or walk-in freezer means the walls and ceiling of the walk-in cooler or walk-in freezer but not the doors or floors.

"Flake ice" means ice produced by freezing a thin layer of water on a refrigerated cylinder and removing by a scraper.

"Freezer" means a cabinet that is designed as a unit for the freezing and storage of food, beverages, or ice at temperatures of 0°F or below and that has a source of refrigeration requiring an energy input.

"Freezer compartment" means a compartment designed for the freezing and storage of food, beverages, or ice at temperatures below 8° F.

"Freezer volume" means net freezer compartment volume as defined in ANSI/AHAM HRF-1-1979.

"Harvest rate" means the amount of ice (at 32°F) in pounds produced per 24 hours.

"Holding temperature application" means a use of commercial refrigeration equipment other than a pull-down temperature application, except a blast chiller or freezer.

"Ice cream cabinet" means a reach-in cabinet commercial freezer that has top, or top and side, doors that are hinged or sliding and that is designed for the storage or dispensing of ice cream or similar foods.

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

"Ice-making head" means automatic commercial ice makers that do not contain integral storage bins, but are generally designed to accommodate a variety of bin capacities. Storage bins entail additional energy use not included in the reported energy consumption figures for these units.

"Integrated average temperature" means the average temperature of all test package measurements taken during the test as determined using the applicable test method in Section 1604(a).

"Internal freezer refrigerator" means a refrigerator that includes a compartment contained within the refrigerator cabinet that is designed for the short-term storage of food at temperatures below 32°F.

"Kitchen unit" means a compact refrigerator, with or without an internal freezer, integrated with other appliances or facilities, including but not limited to microwave ovens, sinks, and electric cooktops.

"Manual defrost system" means a defrost system in which the defrosting action for refrigerated surfaces is initiated or terminated manually.

"Milk, beverage, and ice cream cabinet" means a reach-in cabinet commercial refrigerator-freezer that has top, or both top and side, doors that are hinged or sliding and that is designed for the storage or dispensing of milk or other beverages, and ice cream or similar foods.

"Milk or beverage cabinet" means a reach-in cabinet commercial refrigerator that has top, or both top and side, doors that are hinged or sliding and that is designed for the storage or dispensing of milk or other beverages.

"Non-commercial freezer" means

(1) a freezer that is a federally-regulated consumer product or

(2) a freezer exceeding 30 ft^3 but not exceeding 39 ft^3 that is a consumer product.

"Non-commercial refrigerator" means a refrigerator that is a federally-regulated consumer product or a wine chiller that is a consumer product.

"Non-commercial refrigerator-freezer" means a refrigerator-freezer that is a federally-regulated consumer product.

"Partial automatic defrost system" means a defrost system in which the defrosting action for refrigerated surfaces in the refrigerator compartment is initiated and terminated automatically and the defrosting action for refrigerated surfaces in the freezer is initiated manually.

"Pass-through cabinet" means a commercial refrigerator or commercial freezer with hinged or sliding doors on both front and rear of the refrigerator or freezer.

"Point of use water dispenser" means a water dispenser that uses a pressurized water utility connection as the source of potable water.

"Preparation table" means a commercial refrigerator with a countertop refrigerated compartment with or without cabinets below, and with self-contained refrigeration equipment.

"Pull-down temperature application" means a commercial refrigerator with doors that, when fully loaded with 12 ounce beverage cans at 90°F, can cool those beverages to an average stable temperature of 38°F in 12 hours or less.

"Reach-in cabinet" means a commercial refrigerator, commercial refrigerator-freezer, or commercial freezer with hinged or sliding doors or lids, but excluding roll-in or roll-through cabinets and pass-through cabinets.

"Refrigerated bottled or canned beverage vending machine" means a commercial refrigerator that cools bottled or canned beverages and dispenses them upon payment.

"Refrigerated multi-package beverage vending machine" means a refrigerated beverage vending machine that is able to display and dispense at least 20 discrete types of beverages.

"Refrigerator" means a cabinet that is designed for the refrigerated storage of food, including but not limited to solid food and wine, beer, and other beverages, at temperatures above 32°F, and that has a source of refrigeration requiring an energy input. It may include a compartment for the freezing and storage of food at temperatures below 32°F, but it does not provide a separate low temperature compartment designed for the freezing and storage of food at temperatures below 8°F.

"Refrigerator compartment" means a compartment designed for the refrigerated storage of food, including but not limited to solid food and wine, beer, and other beverages, at temperatures above 32°F.

"Refrigerator volume" means fresh food compartment volume as defined in ANSI/AHAM HRF-1-1979.

"Refrigerator-freezer" means a cabinet that:

(1) consists of two or more compartments with at least one of the compartments designed for the refrigerated storage of food, including but not limited to solid food and wine, beer, and other beverages, at temperatures above 32°F;

(2) has at least one of the compartments designed for the freezing and storage of food or ice at temperatures below 8°F that may be adjusted by the user to a temperature of 0°F or below; and

(3) has a source of refrigeration requiring an energy input.

"Remote," in reference to any refrigerator, freezer, refrigerator-freezer, reach-in cabinet, pass-through cabinet, roll-in or roll-through cabinet, walk-in cooler, or walk-in freezer means an appliance that:

(1) receives refrigerant fluid from a condensing unit located externally to its cabinet assembly; and

(2) is capable of being purchased and installed with different types of compressor or condenser, so that its efficiency depends on the type of compressor or condenser applied by the purchaser, installer, or user.

"Remote condensing unit" means a factory-made assembly of refrigerating components designed to compress and liquefy a specific refrigerant that is remotely located from the refrigerated equipment

and consists of one or more refrigerant compressors, refrigerant condensers, condenser fans and motors, and factory supplied accessories.

"Roll-in or roll-through cabinet" means a commercial refrigerator or commercial freezer that allows wheeled racks of product to be rolled into or through the refrigerator or freezer.

"Self-contained condensing unit" means a factory-made assembly of refrigerating components designed to compress and liquefy a specific refrigerant that is an integral part of the refrigerated equipment and consists of one or more refrigerant compressors, refrigerant condensers, condenser fans and motors, and factory supplied accessories.

"Self-contained freezer" means a freezer that has the condensing unit mounted in or on the freezer cabinet.

"Self-contained refrigerator" means a refrigerator that has the condensing unit mounted in or on the refrigerator cabinet.

"Self-contained refrigerator-freezer" means a refrigerator-freezer that has the condensing unit mounted in or on the refrigerator-freezer cabinet.

"Standard vendible capacity" means the maximum quantity of standard product that can be dispensed from one full loading of a refrigerated bottled or canned beverage vending machine without further reload operations when used as recommended by the manufacturer.

"Total volume" means the sum of refrigerator volume and freezer volume.

"Undercounter cabinet" means a reach-in cabinet commercial refrigerator or reach-in cabinet commercial freezer that has no worktop surface and that is intended for installation under a separate counter.

"Upright freezer" means a freezer to which access is gained through a side-opening door.

"Walk-in cooler" means an enclosed storage space refrigerated to temperatures above 32°F that can be walked into and has a total chilled storage area of less than 3,000 square feet. "Walk-in cooler" does not include products designed and marketed exclusively for medical, scientific, or research purposes.

"Walk-in freezer" means an enclosed storage space refrigerated to temperatures at or below 32°F that can be walked into and has a total chilled storage area of less than 3,000 square feet. "Walk-in freezer" does not include products designed and marketed exclusively for medical, scientific, or research purposes.

"Water dispenser" means a factory-made assembly that mechanically cools and heats potable water and that dispenses the cooled or heated water by integral or remote means.

"Wine chiller" means a refrigerator designed for the cooling and storage of wine.

"Worktop table" means a counter-height commercial refrigerator or freezer with a worktop surface.

(c) Air Conditioners.

"Air conditioner" means an appliance that supplies cooled air to a space for the purpose of cooling objects within the space.

"Air-cooled air conditioner" means an air conditioner using an air-cooled condenser.

"Air-source heat pump" means an appliance that consists of one or more factory-made assemblies, that includes an indoor conditioning coil, a compressor, and a refrigerant-to-air heat exchanger, and that provides heating and cooling functions.

"Casement-only room air conditioner" means a room air conditioner with an encased assembly designed for mounting in a casement window with a width of 14.8 inches or less and a height of 11.2 inches or less.

"Casement-slider room air conditioner" means a room air conditioner with an encased assembly designed for mounting in a sliding or casement window with a width of 15.5 inches or less.

"Casement window" means a window that opens on hinges at the side.

"Central air conditioner" means an air conditioner that is capable of cooling only by refrigeration and is not a room air conditioner or a packaged terminal air conditioner.

"Central air-conditioning heat pump" means a central air conditioner that is capable of cooling and heating by refrigeration.

"Coefficient of performance (COP)" means the ratio of the produced cooling effect of an air conditioner or heat pump (or its produced heating effect, depending on the mode of operation) to its net work input, when both the cooling (or heating) effect and the net work input are expressed in identical units of measurement, as determined using the applicable test method in Section 1604(b) or 1604(c).

"Compressor motor nominal horsepower" means the horsepower of a compressor motor as listed on the compressor motor's nameplate.

"Compressor power" means the rate of electrical consumption of a compressor, in watts.

"Computer-room air conditioner" means a central air conditioner specifically designed for use in data processing areas, maintaining an ambient temperature of approximately 72°F and a relative humidity of approximately 52 percent.

"Cooling capacity" means a measure of the ability of an air conditioner to remove heat from an enclosed space, as determined using the applicable test method in Section 1604(b) or 1604(c).

"db" means dry bulb.

"Energy efficiency ratio (EER)" means the ratio of the produced cooling effect of an air conditioner or heat pump to its net work input, expressed in Btu/watt-hour, as determined using the applicable test method in Section 1604(b) or 1604(c).

"Evaporatively-cooled air conditioner" means an air conditioner whose refrigerating system has an evaporatively-cooled condenser.

"Gas-fired air-conditioner" means an air conditioner which utilizes gas as the primary fuel.

"Gas-fired heat pump" means a heat pump which utilizes gas as the primary fuel.

"Ground-source closed-loop heat pump" means an appliance that:

(1) consists of one or more factory-made assemblies;

(2) includes an indoor conditioning coil with air moving means, a compressor, and a refrigerant-to-ground heat exchanger; and

(3) provides heating, cooling, or heating and cooling functions.

"Ground water-source heat pump" means an appliance that:

(1) consists of one or more factory-made assemblies;

(2) includes an indoor conditioning coil with air moving means, a compressor, and a refrigerant-to-water heat exchanger; and

(3) provides heating, cooling, or heating and cooling functions.

"Heat pump" means an appliance, other than a packaged terminal heat pump, that consists of one or more assemblies; that uses an indoor conditioning coil, a compressor, and a refrigerant-to-outdoor air heat exchanger to provide air heating; and that may also provide air cooling, dehumidifying, humidifying, circulating, or air cleaning.

"Heating seasonal performance factor (HSPF)" means the total space heating required during the space heating season, expressed in Btu's, and divided by the total electrical energy consumed by the heat pump system during the same season, expressed in watt-hours, as determined using the applicable test method in Section 1604(c).

"Indoor fan electrical input" means the electrical input required for the operation of an indoor fan, in watts.

"Indoor fan motor nominal horsepower" means the horsepower of an indoor fan motor as listed on the fan motor's nameplate.

"Indoor fan motor type" means the internal construction design of a motor.

"Integrated part load value (IPLV)" means part load efficiency, as determined using the applicable test method in Section 1604(c).

"Outdoor fan electrical input" means the electrical input required for the operation of an outdoor fan, in watts.

"Outdoor fan motor nominal horsepower" means the horsepower of an outdoor fan motor as listed on the fan motor's nameplate.

"Packaged terminal air conditioner" means a wall sleeve and a separate unencased combination of heating and cooling assemblies specified by the builder and intended for mounting through the wall and that is industrial equipment. It includes a prime source of refrigeration, separable outdoor louvers, forced ventilation, and heating availability by builder's choice of hot water, steam, or electricity.

"Packaged terminal heat pump" means a packaged terminal air conditioner that utilizes reverse cycle refrigeration as its prime heat source, that has a supplementary heating source available, with the choice of hot water, steam, or electric resistant heat, and that is industrial equipment.

"Premium motor" means a premium motor as defined in *NEMA Premium™: Product Scope and Nominal Efficiency Levels (2001).*

"Room air conditioner" means a factory-encased air conditioner that is designed

(1) as a unit for mounting in a window, through a wall, or as a console, and

(2) for delivery without ducts of conditioned air to an enclosed space.

"Room air-conditioning heat pump" means a room air conditioner that is capable of heating by refrigeration.

"Seasonal energy efficiency ratio (SEER)" means the total heat removed from the conditioned space during the annual cooling season, expressed in Btu's, divided by the total electrical energy consumed by the air conditioner or heat pump during the same season, expressed in watt-hours, as determined using the applicable test method in Section 1604(c).

"Single package central air conditioner" means a central air conditioner in which all the major assemblies are enclosed in one cabinet.

"Single package heat pump" means a heat pump in which all the major assemblies are enclosed in one cabinet.

"Single package vertical air conditioner" means air-cooled commercial package air conditioning and heating equipment that:

(1) is factory-assembled as a single package that:

  (A) has major components that are arranged vertically;

  (B) is an encased combination of cooling and optional heating components; and

  (C) is intended for exterior mounting on, adjacent interior to, or through an outside wall;

(2) is powered by a single- or three-phase current;

(3) may contain one or more separate indoor grilles, outdoor louvers, various ventilation options, indoor free air discharges, ductwork, well plenum, or sleeves; and

(4) has heating components that may include electrical resistance, steam, hot water, or gas, but may not include reverse cycle refrigeration as a heating means.

"Single package vertical heat pump" means a single package vertical air conditioner that:

(1) uses reverse cycle refrigeration as its primary heat source; and

(2) may include secondary supplemental heating by means of electrical resistance, steam, hot water, or gas.

"Small duct, high velocity system" means a heating and cooling product that contains a blower and indoor coil combination that:

(1) is designed for, and produces, at least 1.2 inches of external static pressure when operated at the certified air volume rate of 220-350 cfm per rated ton of cooling; and

(2) when applied in the field, uses high velocity room outlets generally greater than 1000 fpm which have less than 6.0 square inches of free area.

"Space constrained product" means a central air conditioner or heat pump:

(1) that has rated cooling capacities no greater than 30,000 BTU/hr;

(2) that has an outdoor or indoor unit having at least two overall exterior dimensions or an overall displacement that:

(A) are (is) substantially smaller than those of other units that are

1. currently installed in site-built single family homes, and

2. of a similar cooling, and , if a heat pump, heating, capacity, and

(B) if increased, would certainly result in a considerable increase in the usual cost of installation or would certainly result in a significant loss in the utility of the product to the consumer; and

(3) of a product type that was available for purchase in the United States as of December 1, 2000.

"Split system central air conditioner" means a central air conditioner in which one or more of the major assemblies are separate from the others.

"Split system heat pump" means a unitary heat pump in which one or more of the major assemblies are separate from the others in a central air conditioner or a central air conditioning heat pump.

"Standard motor" in a central air conditioner or a central air-conditioning heat pump means a motor that is not a premium motor.

"Thermostatic expansion valve (TXV)" means a refrigerant metering valve, installed in an air conditioner or heat pump, which controls the flow of liquid refrigerant entering the evaporator in response to the super heat of the gas leaving it.

"Through-the-wall air conditioner and heat pump" means a central air conditioner or heat pump that is designed to be installed totally or partially within a fixed-size opening in an exterior wall, and:

(1) is manufactured prior to January 23, 2010;

(2) is not weatherized;

(3) is clearly and permanently marked for installation only through an exterior wall;

(4) has a rated cooling capacity no greater than 30,000 Btu/hr;

(5) exchanges all of its outdoor air across a single surface of the equipment cabinet; and

(6) has a combined outdoor air exchange area of less than 800 square inches (split systems) or less than 1,210 square inches (single packaged systems) as measured on the surface described in paragraph (5) of this definition.

"Unitary air conditioner" means a central air conditioner consisting of one or more factory-made assemblies that include an evaporator or cooling coil and an electrically-driven compressor and condenser combination.

"Unitary heat pump" means a central air conditioning heat pump that consists of one or more factory-made assemblies, including an indoor conditioning coil, a compressor, and an outdoor coil, that provides a heating function, and that may provide a cooling function.

"Water-cooled air conditioner" means an air conditioner whose refrigerating system has a water-cooled condenser.

"Water-source heat pump" means an appliance that:

(1) consists of one or more factory-made assemblies;

(2) includes an indoor conditioning coil, a compressor, and a refrigerant-to-water heat exchanger; and

(3) provides heating and cooling functions.

"wb" means wet bulb.

"Year-round air conditioner" means an appliance that contains an air conditioner and a furnace in the same cabinet.

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

"Airflow" of ceiling fans means the rate of air movement at a specific fan-speed setting expressed in cfm.

"Airflow efficiency" means the ratio of airflow divided by power at a specific ceiling fan-speed setting expressed in cfm/watt.

"Ceiling fan" means a nonportable device that is suspended from a ceiling for circulating air via the rotation of fan blades.

"Ceiling fan light kit" means equipment designed to provide light from a ceiling fan that can be:

(1) integral, such that the equipment is attached to the ceiling fan prior to the time of retail sale; or

(2) attachable, such that at the time of retail sale the equipment is not physically attached to the ceiling fan, but may be included inside the ceiling fan at the time of sale or sold separately for subsequent attachment to the fan.

"Cooling efficiency ratio (CER)" means the efficiency of a spot air conditioner obtained by dividing the sum of the cooling capacity and the fan electrical input, both in Btu per hour by the total electrical input in watts, all as determined using the test method specified in Section 1604(d).

"Dehumidifier" means a self-contained, electrically operated, and mechanically encased assembly consisting of:

(1) a refrigerated surface (evaporator) that condenses moisture from the atmosphere;
(2) a refrigerating system, including an electric motor;
(3) an air-circulating fan; and
(4) means for collecting or disposing of the condensate.

"Direct evaporative cooler" means a heat and mass transfer device used to adiabatically cool air passing through the device by the process of evaporating water directly exposed to this air.
"Energy factor for dehumidifiers" means a measure of energy efficiency of a dehumidifier calculated by dividing the water removed from the air by the energy consumed, measured in liters per kWh (l/kWh).

"Evaporative cooler" means an appliance that cools indoor air directly or indirectly by evaporation of water. "Evaporative Cooler" does not include portable or spot evaporative coolers.

"Evaporative cooler efficiency ratio (ECER)" means a measure of the cooling efficiency defined in Table D-1 of Section 1604(d).

"Indirect evaporative cooler" means a heat and mass transfer device used to sensibly cool a primary airstream, without addition of moisture, by means of an evaporatively cooled secondary airstream.

"Input power" of a ceiling fan light kit means the actual total power used by all lamp(s) and ballast(s) of the ceiling fan light kit during operation, expressed in watts and measured using the lamp and ballast packaged with the kit.

"Lamp ballast platform" of a ceiling fan light kit means a pairing of one ballast with one or more lamps that can operate simultaneously on that ballast. A unique platform is defined by the manufacturer and model number of the ballast and lamp(s) and the quantity of lamps that operate on the ballast.

"Lamp lumens" of a ceiling fan light kit means a measurement of luminous flux expressed in lumens and measured using the lamp and ballast shipped with the fixture.

"Low-profile ceiling fan" means a ceiling fan where the motor mounts directly to the ceiling and that cannot be mounted using a down-rod.

"Packaged direct evaporative cooler" means a direct evaporative cooler with an air-moving device that includes the entire water distribution, collection, and recirculation system with pump and piping. "Packaged direct evaporative cooler" does not include portable or spot evaporative coolers.

"Packaged indirect evaporative cooler" means an indirect evaporative cooler with integrated or nonintegrated primary and secondary air passages and provided with both primary and secondary air-moving devices. This device also includes the entire water distribution, collection, and recirculation system with pump and piping.

"Packaged indirect/direct evaporative cooler" means a product incorporating both an indirect evaporative cooler and a direct evaporative cooler, and including the entire water distribution, collection, and recirculation system with pump and piping.

"Portable or Spot Evaporative Cooler" means an evaporative cooler that is non-ducted, not designed for permanent installation, and can be plugged into a standard mains outlet.

"Product capacity for dehumidifiers" means a measure of the ability of a dehumidifier to remove moisture from its surrounding atmosphere, measured in pints collected per 24 hours of continuous operation.

"Residential exhaust fan" means a permanently installed bathroom, kitchen, or utility room ceiling or wall-mounted exhaust fan. "Residential exhaust fan" does not include the exhaust fans included in microwave / oven hood combination units.

"Spot air conditioner" means an air conditioner that discharges cool air into a space and discharges rejected heat back into that space, where there is no physical boundary separating the discharges.

"System efficacy per lamp ballast platform" of a ceiling fan light kit means the ratio of measured lamp lumens expressed in lumens and measured input power expressed in watts.

"Whole house fan" means an exhaust fan that is mounted in the ceiling of a residence that is capable of moving 1,000 cfm or more, and that provides cooling or fresh air.

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

"Annual fuel utilization efficiency (AFUE)" means the efficiency descriptor for furnaces and boilers, as determined using the applicable test method in Section 1604(e) and based on the assumption that all:

(1) weatherized warm air furnaces or boilers are located out-of doors;

(2) warm air furnaces which are not weatherized are located indoors and all combustion and ventilation air is admitted through grill or ducts from the outdoors and does not communicate with air in the conditioned space;

(3) boilers which are not weatherized are located within the heated space.

"Automatic flue damper" means a device installed in the flue outlet or in the inlet of or upstream of the draft control device of an individual, automatically operated, fossil fuel-fired appliance that is

designed to automatically open the flue outlet during appliance operation and to automatically close the flue outlet when the appliance is in a standby condition.

"Automatic vent damper" means a device intended for installation in the venting system of an individual, automatically operated, fossil fuel-fired appliance either in the outlet or downstream of the appliance draft control device, which is designed to automatically open the venting system when the appliance is in operation and to automatically close off the venting system when the appliance is in a standby or shutdown condition.

"Boiler" means a space heater that is a self-contained appliance for supplying steam or hot water primarily intended for space-heating. "Boiler" does not include hot water supply boilers.

"Central furnace" means a self-contained space heater designed to supply heated air through ducts of more than 10 inches length.

"Combination space-heating and water-heating appliance" means an appliance that is designed to provide both space heating and water heating from a single primary energy source.

"Combined annual efficiency (CAE)" means [(SHF x $Effy_{hs}$/100) + (WHF x $Effy_{ss}$/100) + (R x NHF x EF)] divided by [SHF + WHF + (R x NHF)] as defined in the applicable test method in Section 1604(e)(3).

"Combustion efficiency of a space heater" means a measure of the percentage of heat from the combustion of gas or oil that is transferred to the space being heated or lost as jacket loss, as determined using the applicable test method in Section 1604(e).

"Combustion efficiency for a commercial packaged boiler" means the efficiency descriptor for packaged boilers, determined using test procedures prescribed under 10 CFR Section 431.86 (2008) and equals to 100 percent minus percent flue loss (percent flue loss is based on input fuel energy).

"Direct vent system" means a system supplied by a manufacturer which provides outdoor air or air from an unheated space (such as an attic or crawl space) directly to a furnace or vented heater for combustion and for draft relief if the unit is equipped with a draft control device.

"Duct furnace" means a space heater designed to be installed within a duct.

"Energy consumption during standby" means the energy consumed by a gas or oil space heater when the main burner is not operating, not including energy consumption related to associated cooling equipment, and reported in watts, based on a conversion factor of 3.412 Btu per watt-hour.

"Fan type gas space heater" means a space heater in which heat is distributed to the surrounding area through the use of an electric fan.

"Floor furnace" means a self-contained, floor-mounted space heater without ducts.

"Floor-mounted unit heater" means a unit heater designed for mounting on the floor rather than suspension mounting.

"Gravity type gas space heater" means a gas space heater in which heat is distributed to the surrounding area as a result of the differences in densities of cooler and warmer air in the surrounding atmosphere.

"High intensity infrared heater" means an infrared gas space heater that has a radiating surface that operates at or above 1,350°F.

"High static unit heater" means a unit heater that has an integral means for the circulation of air against 0.2 inch or greater static pressure.

"Indoor duct furnace" means a duct furnace designed to operate under sheltered conditions.

"Infrared gas space heater" means a gas space heater that directs a substantial amount of its energy output in the form of infrared energy into the area to be heated.

"Low intensity infrared heater" means an infrared gas space heater that has a radiating surface that operates at less than 1,350°F.

"Low static unit heater" means a unit heater that has an integral means for the circulation of air against less than 0.2 inch static pressure.

"Mobile home furnace" means a direct vent furnace that is designed for use only in mobile homes.
"Non-packaged boiler" means a boiler that is not a packaged boiler.

"Outdoor duct furnace" means a duct furnace designed to function normally under varying outdoor weather conditions.

"Outdoor furnace or boiler" means a furnace or boiler normally intended for installation out-of-doors or in an unheated space (such as an attic or crawl space).

"Output" means the rate of useful heat output when operating under steady state conditions.

"Packaged boiler" means a boiler that is shipped complete with heating equipment, mechanical draft equipment, and automatic controls; usually shipped in one or more sections and does not include a boiler that is custom designed and field constructed. If the boiler is shipped in more than one section, the sections may be produced by more than one manufacturer, and may be originated or shipped at different times and from more than one location.

"Patio heater" means an infrared gas space heater that is designed for warming outdoor areas using radiant heat.

"Portable infrared heater" means a free-standing infrared gas space heater designed with the intent of being moved from one space to another.

"Power venting" means a venting system that uses a separate fan, either integral to the appliance or attached to the vent pipe, products of combustion.

"Premium motor" means a premium motor as defined in *NEMA Premium™: Product Scope and Nominal Efficiency Levels (2001).*

"Radiant coefficient" means a measure of efficiency of an infrared heater, as determined using the applicable test method in Section 1604(e).

"Radiant tube-type infrared heater" means a low-intensity infrared gas space heater in which combustion takes place within a tube.
"Room heater" means a free-standing non-recessed space heater.

"Space heater" means an appliance that supplies heat to a space for the purpose of providing warmth to objects within the space.

"Standard motor" of a central gas furnace means a motor that is not a premium motor.

"Standby loss" of a boiler means the sum of the gas used by the pilot (converted to watts), the electricity used by controls, and any other energy used while the boiler is not operating.

"Steam boiler" means a boiler that supplies steam.

"Thermal efficiency" of a space heater means a measure of the percentage of heat from the combustion of gas or oil that is transferred to the space being heated, or in the case of a boiler, to the hot water or steam, as determined using the applicable test methods in Section 1604(e). Thermal efficiency of a commercial warm air furnace equals 100 percent minus percent flue loss, as determined using test procedures prescribed under 10 CFR Section 431.76 (2008).

"Unit heater" means a self-contained, automatically-controlled, vented fan-type gas space heater designed to be installed without ducts, within the heated space.

"Unvented gas space heater" means a gas space heater designed to be used without a vent.

"Unvented oil space heater" means an oil space heater designed to be used without a vent.

Note: See Health and Safety Code Section 19881 for restrictions on the sale of unvented gas space heaters and unvented oil space heaters.

"Vented floor furnace" means a self-contained vented heater suspended from the floor of the space being heated, taking air for combustion from outside this space. The vented floor furnace supplies heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.

"Vented gas space heater" means a gas space heater designed to be used with a vent.

"Vented home heating equipment" or "vented heater" means a class of home heating equipment, not including furnaces, designed to furnish warmed air to the living space of a residence, directly from the

device, without duct connections (except that boots not to exceed 10 inches beyond the casing may be permitted) and includes: vented wall furnace, vented floor furnace, and vented room heater.

"Vented oil space heater" means an oil space heater designed to be used with a vent.

"Vented room heater" means a self-contained, free standing, non-recessed, vented heater for furnishing warmed air to the space in which it is installed. The vented room heater supplies heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.

"Vented wall furnace" means a self-contained vented heater complete with grilles or the equivalent, designed for incorporation in, or permanent attachment to, a wall of a residence and furnishing heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.

"Wall furnace" means a wall-mounted, self-contained space heater without ducts that exceed 10 inches.

"Water boiler" means a boiler that supplies hot water.

(f) Water Heaters.

"Booster water heater" means a water heater that raises the temperature of the preheated water supplied to the unit typically from 110°F - 140°F to 180°F - 195°F.

"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).

"Energy input rate" of a booster water heater means the peak rate at which a booster water heater consumes energy expressed in Btu/hr or kW.

"First-hour rating" means an estimate of the maximum volume of "hot" water that a storage-type water heater can supply within an hour that begins with the water heater fully heated (i.e., with all thermostats satisfied). It is a function of both the storage volume and the recovery rate.

"Heat pump water heater" means a device using the vapor compression cycle to transfer heat from a low-temperature source to a higher temperature sink for the purpose of heating water, including all necessary ancillary equipment, fans, blowers, pumps, storage tanks, piping, and controls.

"Hot water dispenser" means a small electric water heater that has a measured storage volume no greater than 1.0 gallon.

"Hot water supply boiler" means a packaged boiler that is industrial equipment and that:

(1) has an input rating from 300,000 Btu/hour to 12,500,000 Btu/hour and of at least 4,000 Btu/hour per gallon of stored water;
(2) is suitable for heating potable water; and
(3) meets either or both of the following conditions:

(A) it has the temperature and pressure controls necessary for heating potable water for purposes other than space heating; or

(B) the manufacturer's product literature, product markings, product marketing, or product installation and operation instructions indicate that the boilers intended uses include heating potable water for purposes other than space heating.

"Input" means rate of energy consumption.

"Instantaneous water heater" means a water heater that has an input rating of at least 4,000 Btu per hour per gallon of stored water.

"Large water heater" means a water heater that is not a small water heater.

"Maximum gpm (L/min) rating" means the maximum gallons per minute (liters per minute) of hot water that can be supplied by an instantaneous water heater while maintaining a nominal temperature rise of 77°F (42.8°C) during steady state operation.

"Mini-tank electric water heater" means a small electric water heater that has a measured storage volume more than 1.0 gallon and a rated storage volume less than 20 gallons.

"Rated storage volume" means the water storage capacity of a water heater, in gallons (liters), as specified by the manufacturer.

"Recovery efficiency" of a water heater means the ratio of energy delivered to the water to the energy content of the fuel consumed by the water heater, as determined using the applicable test method in Section 1604(f).

"Small water heater" means a water heater that is a gas storage water heater with an input of 75,000 Btu per hour or less, an oil storage water heater with an input of 105,000 Btu per hour or less, an electric storage water heater with an input of 12 kW or less, a gas instantaneous water heater with an input of 200,000 Btu per hour or less, an oil instantaneous water heater with an input of 210,000 Btu per hour or less, an electric instantaneous water heater with an input of 12 kW or less, or a heat pump water heater rated at 24 amps or less.

"Storage water heater" means a water heater that heats and stores water within the appliance at a thermostatically-controlled temperature for delivery on demand, and that has an input less than 4,000 Btu per hour per gallon of stored water.

"Tabletop water heater" means a water heater in a rectangular box enclosure designed to slide into a kitchen countertop space with typical dimensions of 36 inches high, 25 inches deep, and 24 inches wide.

"Thermal efficiency" of a water heater means a measure of the percentage of heat from the combustion of gas or oil that is transferred to the water, as determined using the applicable test method in Section 1604(f).

"Water heater" means an appliance for supplying hot water for purposes other than space heating or pool heating.

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

"Capacitor start-capacitor run" means a capacitor start single phase motor that has a capacitor in series with the starting winding.

"Capacitor start-induction run" means a motor that uses a capacitor via the starting winding to start an induction motor, where the capacitor is switched out by a centrifugal switch once the motor is up to speed.

"Coefficient of performance (COP)" of a heat pump pool heater means the ratio of heat output to the total power input in consistent units, as determined using the applicable test method in Section 1604(g).

"Default speed" means the low speed, having a rotation rate that is no more than one-half of the motor's maximum rotation rate.

"Electronically commutated motor (ECM)" means a brushless DC motor that utilizes a permanent magnet rotor and built in inverters.

"Heat pump pool heater" means an air-to-water heat pump pool heater, employing a compressor, water-cooled condenser, and outdoor air coil in a single package assembly.

"Low temperature rating" means the conditions described as "low temperature rating" in Table G of Section 1604(g).

"Multi speed motor" means a motor whose speed may be selected from several different pre-set ranges.

"Nameplate HP" means the HP displayed on the nameplate mounted on the motor.

"Permanent split capacitor (PSC)" means a two-phase motor operated from a single-phase voltage source with a capacitor connected in series with either one of the two windings.

"Pool heater" means an appliance designed for heating non-potable water contained at atmospheric pressure for swimming pools, spas, hot tubs and similar applications.

"Pool pump motor capacity" means a value equal to the product of motor's nameplate HP and service factor.

"Portable electric spa" means a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water.

"Readily accessible on-off switch" of a pool heater means an on-off switch located in a place that can be easily used without the need for tools to remove any covering when the pool heater is on display in a store or when it is installed.

"Replacement residential pool pump motor" means a replacement motor intended to be coupled to an existing residential pool pump that is used to circulate and filter pool water in order to maintain clarity and sanitation.

"Residential pool pump" means an impeller attached to a motor that is used to circulate and filter pool water in order to maintain clarity and sanitation.

"Residential pool pump and motor combination" means a residential pool pump motor coupled to a residential pool pump.

"Residential pool pump motor" means a motor that is used as a replacement residential pool pump motor or as part of a residential pool pump and motor combination.

"Service factor (of an AC motor)" means a multiplier which, when applied to the rated horsepower, indicates a permissible horsepower loading which can be carried under the conditions specified for the service factor.

"Spa conditions rating" means the conditions described as "spa conditions rating" in Table G of Section 1604(g).

"Spa volume" means the actual fill volume of the spa, under normal use, in gallons, as defined in the test method in Section 1604(g)(2)(B).

"Speed" means the number of revolutions of the motor shaft in a given unit of time. Speed is expressed in revolutions per minute (RPM).

"Split phase start" means a motor that employs a main winding with a starting winding to start the motor. After the motor has attained approximately 75 percent of rated speed, the starting winding is automatically disconnected by means of a centrifugal switch or by a relay.

"Standard temperature rating" means the conditions described as "standard temperature rating" in Table G of Section 1604(g).

"Thermal efficiency" of a pool heater means a measure of the percentage of heat from the input that is transferred to the water, as determined using the applicable test method in Section 1604(g).

"Total horsepower (of an AC motor)" means a value equal to the product of the motor's service factor and the motor's nameplate (rated) horsepower.

"Two speed motor" means a motor designed or intended to be operated at one of two preset speeds.

"Variable speed motor" means a motor whose speed can vary continuously over a specified range.

(h) Plumbing Fittings.

"Commercial pre-rinse spray valve" means a hand-held device designed and marketed for use with commercial dishwashing and ware washing equipment that sprays water on dishes, flatware, and other food service items for the purpose of removing food residue before cleaning the items.

"Faucet" means a lavatory faucet, kitchen faucet, metering faucet, or replacement aerator for a lavatory or kitchen faucet.

"Flow rate" means the rate of water flow of a plumbing fitting, as determined using the applicable test method in Section 1604(h).

"Kitchen faucet" means a faucet designed for discharge into a kitchen sink.

"Kitchen replacement aerator" means an aerator sold as a replacement, separate from the kitchen faucet to which it is intended to be attached.

"Lavatory" means a basin or bowl designed for washing the face and hands.

"Lavatory faucet" means a plumbing fitting designed for discharge into a lavatory.

"Lavatory replacement aerator" means an aerator sold as a replacement, separate from the lavatory faucet to which it is intended to be attached.

"Leakage rate" means the rate of leakage through a tub spout diverter directly into the bathtub when the diverter is in the diverting position, as determined using the applicable test method in Section 1604(h).

"Lift-type tub spout diverter" means a tub spout diverter that is operated by lifting the control.

"Metering faucet" means a faucet that, when turned on, will gradually shut itself off over a period of several seconds.

"Plumbing fitting" means a showerhead, lavatory faucet, kitchen faucet, metering faucet, lavatory replacement aerator, kitchen replacement aerator, wash fountain, or tub spout diverter.

"psi" means pounds per square inch.

"Pull-type tub spout diverter" means a tub spout diverter that is operated by pulling the control.

"Push-type tub spout diverter" means a tub spout diverter that is operated by pushing the control.

"Showerhead" means a device through which water is discharged for a shower bath. Showerhead means any showerhead (including a hand held showerhead), except a safety showerhead.

"Showerhead-tub spout diverter combination" means a group of plumbing fittings sold as a matched set and consisting of a control valve, a tub spout diverter, and a showerhead.

"Tub spout diverter" means a device designed to stop the flow of water into a bathtub and to divert it so that the water discharges through a showerhead.

"Turn-type tub spout diverter" means a tub spout diverter that is operated by turning the control.

"Wash fountain" means a lavatory faucet designed for simultaneous use by two or more persons.

"Water use" means the quantity of water flowing through a showerhead or faucet, at point of use, determined in accordance with test procedures under Appendix S of subpart B of 10 CFR part 430 (2008).

(i) Plumbing Fixtures.

"Blowout type bowl" means a nonsiphonic type water closet bowl that is designed for a blowout action, and that has an integral flushing rim, a trapway at the rear of the bowl, a visible or concealed jet, a wall outlet, and, if wall mounted, a three bolt hole configuration.

"Blowout water closet" means a water closet with a blowout type bowl.

"Electromechanical hydraulic water closet" means a water closet that utilizes electrically operated devices, such as, but not limited to, air compressors, pumps, solenoids, motors, or macerators in place of or to aid gravity in evacuating waste from the toilet bowl.

"Flushometer tank" means a flushometer valve that is integrated within an accumulator vessel affixed and adjacent to a plumbing fixture inlet so as to cause an effective enlargement of the supply line immediately before the fixture.

"Flushometer tank water closet" means a water closet utilizing a flushometer tank.

"Flushometer valve" means a valve that is attached to a pressurized water supply pipe and that is designed so that when actuated it opens the line for direct flow into the fixture at a rate and predetermined quantity to properly operate the fixture, and then gradually closes in order to provide trap reseal in the fixture and to avoid water hammer. The pipe to which the device is connected is, in itself, of sufficient size that when open shall allow the device to deliver water at a sufficient rate of flow for flushing purposes.

"Gallons per flush (gpf)" means gallons per flush as determined using the applicable test method in Section 1604(i).

"Gravity tank-type water closet" means a water closet that includes a storage tank from which water flows into the bowl by gravity.

"Plumbing fixture" means a water closet or a urinal.

"Prison-type urinal" means a urinal designed and marketed expressly for use in prison-type institutions.

"Prison-type water closet" means a water closet designed and marketed expressly for use in prison-type institutions.

"Trough-type urinal" means a urinal designed for simultaneous use by two or more persons.

"Urinal" means a plumbing fixture that receives only liquid body waste and, on demand, conveys the waste through a trap seal into a gravity drainage system.

"Vacuum-type urinal" means a urinal whose bowl is evacuated by the application of a vacuum.

"Vacuum-type water closet" means a water closet whose bowl is evacuated by the application of a vacuum.

"Water closet" means a plumbing fixture having a water-containing receptor that receives liquid and solid body waste through an exposed integral trap into a gravity drainage system.

"Water use" means the quantity of water flowing through a water closet or urinal at point of use, determined in accordance with test procedures under Appendix T of subpart B of 10 CFR part 430 (2008).

"Waterless urinal" means a urinal designed to be used without the application of water for flushing.

(j) Fluorescent Lamp Ballasts.

"Ballast efficacy factor" means the relative light output divided by the power input of a fluorescent lamp ballast, as measured under test conditions specified in ASNI C82.2-1984.

"Cathode heater cut-out circuit design" or "Cathode cut-out circuit design" means a fluorescent lamp ballast design that incorporates a cathode heater cut out device that turns off the cathode heaters in fluorescent lamps once the lamps are ignited and operating.
"Continuous dimming ballast" means a fluorescent lamp ballast that can continuously vary lamp light levels.

"Electronic circuit design" means the type of circuit used in an electronic fluorescent lamp ballast.

"Fluorescent lamp ballast" means a device that is used to start and operate fluorescent lamps by providing a starting voltage and current and limiting the current during normal operation.

"F34T12 lamp" (also known as a "F40T12/ES lamp") means a nominal 34 watt tubular fluorescent lamp that is 48 inches in length and 1½ inches in diameter, and conforms to ANSI C78.81-2003 (Data Sheet 7881-ANSI-1006-1).

"F40T12 lamp" means a nominal 40 watt tubular fluorescent lamp that is 48 inches in length and1½ inches in diameter, and conforms to ANSI C78.81-2003 (Data Sheet 7881-ANSI-1010-1).

"F96T12 lamp" means a nominal 75 watt tubular fluorescent lamp that is 96 inches in length and 1½ inches in diameter, and conforms to ANSI C78.81-2003 (Data Sheet 7881-ANSI-3007-1).

"F96T12/ES lamp" means a nominal 60 watt tubular fluorescent lamp that is 96 inches in length and 1½ inches in diameter, and conforms to ANSI C78.81-2003 (Data Sheet 7881-ANSI-3006-1).

"F96T12HO lamp" means a nominal 110 watt tubular fluorescent lamp that is 96 inches in length, and 1½ inches in diameter, and conforms to ANSI C78.81-2003 (Data Sheet 7881-ANSI-1019-1).

"F96T12HO/ES lamp" means a nominal 95 watt tubular fluorescent lamp that is 96 inches in length and 1½ inches in diameter, and conforms to ANSI C78.81-2003 (Data Sheet 7881-ANSI-1017-1).

"Instant start ballast" or "slimline instant start ballast" means a fluorescent lamp ballast that allows for instantaneous light production without the use of a starter circuit.

"Magnetic circuit design" means a fluorescent lamp ballast design that uses a magnetic core and coil and that alters the voltage and current, but not the frequency, to the lamp.

"Maximum input watts" means the maximum input wattage to a ballast resulting from the operation of the maximum number of lamps when tested in accordance with input/output measurements in the UL 935 standard for fluorescent lamp ballasts.

"Mercury vapor lamp" means a high intensity discharge lamp in which the major portion of the light is produced by radiation from mercury operating at a partial pressure in excess of 100,000 PA (approximately 1 atm), including such lamps that are clear, phosphor-coated, and self-ballasted.

"Mercury vapor lamp ballast" means a device that is designed and marketed to start and operate mercury vapor lamps by providing the necessary voltage and current.

"Minimum input watts" means the minimum input wattage to a ballast resulting from the minimum number of lamps when tested in accordance with input/output measurements in the UL 935 standard for fluorescent lamp ballasts.

"Power factor" of a fluorescent lamp ballast means the power input divided by the product of ballast input voltage and input current of a fluorescent lamp ballast, as measured under test conditions specified in ANSI C-82.2-1984.

"Power input" means the power consumption in watts of a ballast and its associated fluorescent lamp or lamps, as determined using the applicable test method in Section 1604(j).

"Rapid start ballast" means a fluorescent lamp ballast design that uses a starter circuit to heat the cathodes before and during operation.

"Relative light output" means the light output delivered through the use of a ballast divided by the light output delivered through the use of a reference ballast, expressed as a percent, as determined using the applicable test method in Section 1604(j).

"Replacement ballast" means a ballast that:

(1) is manufactured on or before June 30, 2010;

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

(3) is marked "FOR REPLACEMENT USE ONLY";

(4) is shipped by the manufacturer in packages containing not more than 10 ballasts; and

(5) has output leads that when fully extended are a total length that is less than the length of the lamp with which they are intended to be operated.

"Stepped dimming ballast" means a fluorescent lamp ballast that can operate lamps at two or more light output steps.

"T5 lamp" means a tubular fluorescent lamp 5/8 inches in diameter.

"T8 lamp" means a tubular fluorescent lamp 8/8 or 1 inch in diameter.

"T12 lamp" means a tubular fluorescent lamp 12/8 or 1½ inches in diameter.

(k) Lamps.

"Appliance Lamp" means any lamp specifically designed to operate in a household appliance, has a maximum wattage of 40 watts, and is sold at retail, including an oven lamp, refrigerator lamp, and vacuum cleaner lamp; and is designated and marketed for the intended application, with:

(1) the designation on the lamp packaging; and

(2) marketing materials that identify the lamp as being for appliance use.

"Average lamp efficacy (LPW)" means the measured lamp efficacy of fluorescent lamps, general service incandescent lamps, or incandescent reflector lamps, expressed in lumens per watt, as determined using the applicable test method in Section 1604(k).

"Average rated life" means the length of time declared by the manufacturer at which 50 percent of any large number of units of a lamp reaches the end of their individual lives.

"Bi-pin lamp" means a lamp having a base with two pins that is used for tungsten-halogen reflector lamps, low-voltage tungsten-halogen lamps, or fluorescent lamps.

"Black Light Lamp" means a lamp that emits radiant energy in the UV-A band (315-400 nm) and is designated and marketed as a "black light". The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as a black light lamp.

"BPAR incandescent reflector lamp" means a reflector lamp as shown in figure C78.21-278 on page 32 of ANSI C78.21-2003.

"BR incandescent reflector lamp" means a reflector lamp that has:

(1) a bulged section below the bulb's major diameter and above its approximate base line as shown in Figure 1 (RB) on page 7 of ANSI C79.1-1994; and

(2) a finished size and shape shown in ANSI C78.21-1989, including the referenced reflective characteristics in Part 7 of ANSI C78.21-1989.

"BR30" means a BR incandescent reflector lamp with a diameter of 30/8ths of an inch.

"BR40" means a BR incandescent reflector lamp with a diameter of 40/8ths of an inch.

"Bug Lamp" means a lamp that contains a filter to suppress the blue and green portions of the visible spectrum and is designated and marketed as a "bug light". The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a bug lamp.

"Candelabra base incandescent lamp" means a lamp that uses candelabra screw base as described in ANSI C81.61-2006, *Specifications for Electric Bases*, common designations E11 and E12.

"Clear type lamp" means a general service incandescent lamp with an envelope (commonly referred to as the bulb) that utilizes no diffusive coatings. The filament is plainly visible. The illumination it produces is crisp-edged, with well-defined shadows on the background when an object is positioned in its emissive path. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a clear type lamp.

"Colored fluorescent lamp" means a fluorescent lamp designated and marketed as a colored lamp, and with either of the following characteristics: a CRI less than 40, as determined according to the method given in CIE publication 13.3-1995, or a lamp correlated color temperature less than 2,500K or greater than 6,600K.

"Colored incandescent lamp" means an incandescent lamp designated and marketed as a colored lamp that has:

(1) a CRI of less than 50, as determined according to the test method given in CIE publication 13.3-1995; or

(2) a correlated color temperature less than 2,500K, or greater than 4,600K, where correlated color temperature is computed according to the Journal of Optical Society of America, Vol. 58, pages 1528-1595 (1968).

"Design voltage" with respect to an incandescent lamp means:

(1) the voltage marked as the intended operating voltage;

(2) the mid-point of the voltage range if the lamp is marked with a voltage range; or

(3) 120 V if the lamp is not marked with a voltage or voltage range.

"Enhanced Spectrum" or "Modified Spectrum" lamp, as related to incandescent lamps, means an incandescent lamp that is not a colored incandescent lamp, and, when operated at its rated voltage and wattage:

(1) Has a color point (x,y) chromaticity coordinates on the Commission Internationale de l'Eclairage (C.I.E.) 1931 chromaticity diagram that lies below the black-body locus, and

(2) Has a color point (x,y) chromaticity coordinates on the C.I.E. 1931 chromaticity diagram that lies at least 4 MacAdam steps distant from the color point of a clear lamp with the same filament and bulb shape, operated at the same rated voltage and wattage. The MacAdam steps are defined as referenced in Illuminating Engineering Society of North America LM-16-1993.

The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being "enhanced spectrum," "modified spectrum," or a similar designation.

"ER incandescent reflector lamp" means a reflector lamp with an elliptical section below the bulb's major diameter and above its approximate baseline as shown in Figure 1 (RE) on page 7 of ANSI C79.1-1994 and a finished size and shape shown in ANSI C78.21-1989 including the referenced reflective characteristics in part 7 of ANSI C78.21-1989.

"ER30" means an ER incandescent reflector lamp with a diameter of 30/8ths of an inch.

"ER40" means an ER incandescent reflector lamp with a diameter of 40/8ths of an inch.

"Federally-regulated general service fluorescent lamp" means any fluorescent lamp which can be used to satisfy the majority of fluorescent lighting applications but does not include any lamp designed and marketed for the following non-general applications:

(1) fluorescent lamps designed to promote plant growth;
(2) fluorescent lamps specifically designed for cold temperature applications;
(3) colored fluorescent lamps;
(4) impact-resistant fluorescent lamps;
(5) reflectorized or aperture fluorescent lamps;
(6) fluorescent lamps designed for use in reprographic equipment;
(7) lamps primarily designed to produce radiation in the ultra-violet region of the spectrum; or
(8) lamps with a CRI of 87 or greater.

"Federally-regulated general service incandescent lamp" means a standard incandescent or halogen-type lamp that:

(1) is intended for general service applications;
(2) has a medium screw base;
(3) has a lumen range of not less than 310 lumens and not more than 2,600 lumens; and
(4) is capable of being operated at a voltage range at least partially within 110 and 130 volts.

but does not include the following incandescent lamps:

(A) An appliance lamp.
(B) A black light lamp.
(C) A bug lamp.
(D) A colored lamp.
(E) An infrared lamp.

(F) A left-hand thread lamp.

(G) A marine lamp.

(H) A marine signal service lamp.

(I) A mine service lamp.

(J) A plant light lamp.

(K) A reflector lamp.

(L) A rough service lamp.

(M) A shatter-resistant lamp (including a shatter-proof lamp and a shatter-protected lamp).

(N) A sign service lamp.

(O) A silver bowl lamp.

(P) A showcase lamp.

(Q) A 3-way incandescent lamp.

(R) A traffic signal lamp.

(S) A vibration service lamp.

(T) A G shape lamp (as defined in ANSI C78.20-2003 and C79.1-2002) with a diameter of five inches or more.

(U) A T shape lamp (as defined in ANSI C78.20-2003 and C79.1-2002) and that uses not more than 40 watts or has a length of more than 10 inches.

(V) A B, BA, CA, F, G16½, G-25, G30, S, or M-14 lamp (as defined in ANSI C79.1-2002 and ANSI C78.20-2003) of 40 watts or less.

"Federally-regulated general service lamp" includes:

(1) general service incandescent lamps;

(2) compact fluorescent lamps;

(3) general service light-emitting diode (LED or OLED) lamps; and

(4) any other lamps that the Secretary determines are used to satisfy lighting applications traditionally served by general service incandescent lamps;

but does not include any:

(A) lighting application or bulb shape excluded from the definition of "federally-regulated general service incandescent lamp;" or;

(B) general service fluorescent lamp or incandescent reflector lamp.

"Federally-regulated incandescent reflector lamp" (commonly referred to as a reflector lamp) means any lamp in which light is produced by a filament heated to incandescence by an electric current, that:

(1) is not colored or designed for rough or vibration service applications;

(2) contains an inner reflective coating on the outer bulb to direct the light;

(3) has an R, PAR, ER, BR, BPAR, or similar bulb shape with an E26 medium screw base;

(4) has a rated voltage or voltage range that lies at least partially in the range of 115 and 130 volts;

(5) has a diameter that exceeds 2.25 inches; and

(6) has a rated wattage that is 40 watts or higher.

"Fluorescent lamp" means a low pressure mercury electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light.

"Frost type lamp" means an inside-frosted lamp producing modest diffusion of the light with little reduction of light output. Any lamp labeled as "standard" or "frosted" is a "frost type lamp."

"Incandescent lamp" means a glass enclosure in which light is produced by a filament of conducting material heated by an electric current.

"Infrared lamp" means a lamp that radiates predominately in the infrared region of the electromagnetic spectrum, and where visible radiation is not of principal interest. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being an infrared lamp.

"Initial performance values" means the photometric and electrical characteristics of the lamp at the end of 100 hours of operation.

"Intermediate base incandescent lamp" means a lamp that uses an intermediate screw base as described in ANSI C81.61-2006, *Specifications for Electric Bases*, common designation E17.

"Lamp" means an electrical appliance that includes a glass envelope and produces optical radiation for the purpose of visual illumination, designed to be installed into a luminaire by means of an integral lamp-holder. Types of lamps include incandescent, fluorescent, and high intensity discharge (high pressure sodium and metal halide).

"Lamp Efficacy (LE)" means the measured lumen output of a lamp in lumens divided by the measured lamp electrical power in watts expressed in units of lumens per watt (LPW).

"Lamp electrical power input" means the total electrical input to the lamp, including both arc and cathode power where appropriate, at the reference condition, in units of watts.

"Left-handed thread lamp" means a lamp on which the base screws into a lamp socket in a counter-clockwise direction, and screws out of a lamp socket in a clockwise direction.

"Lumen maintenance" means the luminous flux or lumen output at a given time in the life of the lamp and expressed as a percentage of the rated luminous flux or rated lumen output, respectively.

"Marine Lamp" means a lamp specifically designed to operate in a marine application. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a marine lamp or similar designation.

"Marine Signal Lamp" means a lamp specifically designed to provide signals to marine vessels for seaway safety. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a marine signal lamp or similar designation.

"Medium base compact fluorescent lamp" means an integrally ballasted fluorescent lamp with a medium screw base, a rated input voltage range of 115 to 130 volts, and which is designed as a direct replacement for a general service incandescent lamp; however the term does not include:

(1) any lamp that is:
  (A) specifically designed to be used for special purpose applications; and
  (B) unlikely to be used in general purpose applications, such as the applications described in the definition of "Federally-regulated general service incandescent lamp" in this section; or

(2) any lamp not described in the definition of "Federally-regulated general service incandescent lamp" in this section that is excluded by the Secretary, by rule, because the lamp is:
  (A) designed for special applications; and
  (B) unlikely to be used in general purpose applications.

"Medium screw base" means an Edison screw base identified with the prefix E-26 in the *American National Standard for Electric Lamp Bases*, ANSI IEC C81.61-2003.

"Mercury vapor lamp" means a high intensity discharge (HID) lamp, including clear, phosphor-coated, and self-ballasted screw base lamps, in which the major portion of the light is produced by radiation from mercury typically operating at a partial vapor pressure in excess of 100,000 Pa (approximately 1 atm).

"Mercury vapor lamp ballast" means a device that is designed and marketed to start and operate mercury vapor lamps intended for general illumination by providing the necessary voltage and current.

"Mine Service Lamp" means a lamp specifically designed for use in Mine applications. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a mine service lamp or similar designation.

"Nominal lamp wattage" means the lamp wattage stated by the manufacturer on the lamp and on any accompanying documents or packaging.

"Organic light-emitting diode (OLED)" means a thin-film light-emitting device that typically consists of a series of organic layers between two electrical contacts (electrodes).
"Plant Light Lamp" means a lamp that contains a filter to suppress yellow and green portions of the spectrum and is designated and marketed as a "plant light". The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a plant light.

"R20 incandescent reflector lamp" means a reflector lamp that has a face diameter of approximately 2.5 inches, as shown in figure 1(R) on page 7 of ANSI C79.1-1994.

“Rated lumens” means a lamp’s lumen value as stated by the manufacturer on the lamp, the lamp’s packaging, or the lamp’s marketing materials.

“Rated luminous flux” or “rated lumen output” means the initial lumen rating (100 hour) declared by the manufacturer, which consists of the lumen rating of a lamp at the end of 100 hours of operation.

“Rated supply frequency” means the frequency marked on the lamp.

”Rated voltage” means the voltage marked on the lamp. With respect to incandescent lamps, rated voltage means:

(1) the design voltage if the design voltage is 115V, 130V, or between 115V and 130V;

(2) 115V if the design voltage is less than 115V and greater than or equal to 100V and the lamp can operate at 115V; and

(3) 130V if the design voltage is greater than 130V and less than or equal to 150V and the lamp can operate at 130V.

“Rated wattage” means the wattage marked on the lamp. With respect to 4-foot medium bi-pin T8, T10, or T12 lamps, rated wattage means if the lamp is:

(1) listed in ANSI C78.1-1991, the nominal wattage of a lamp determined by the lamp designation in Annex A.2 of ANSI C78.1-1991; or

(2) a residential straight-shaped lamp, the wattage a lamp consumes when operated on a reference ballast for which the lamp is designed; or

(3) neither listed in ANSI C78.1-1991 nor a residential straight-shaped lamp, the wattage a lamp consumes when using reference ballast characteristics of 236 volts, 0.43 amps and 439 ohms for T10 or T12 lamps, or reference ballast characteristics of 300 volts, 0.265 amps, and 910 ohms for T8 lamps.

"Reflector lamp" means a lamp that has a reflective coating applied directly to part of the bulb surface and that reflects light in a forward direction away from the lamp base. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a reflector lamp or similar designation.

“Residential straight-shaped lamp” means a low pressure mercury electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including a straight-shaped fluorescent lamp with medium bi-pin bases of nominal overall length of 48 inches and is either designed exclusively for residential applications; or designed primarily and marketed exclusively for residential applications.

(1) A lamp is designed exclusively for residential applications if it will not function for more than 100 hours with a commercial high-power-factor ballast.

(2) A lamp is designed primarily and marketed exclusively for residential applications if it:

  (A) is permanently and clearly marked as being for residential use only;

  (B) has a life of 6,000 hours or less when used with a commercial high-power-factor ballast;

(C) is not labeled or represented as a replacement for a fluorescent lamp that is a covered product; and

(D) is marketed and distributed in a manner designed to minimize use of the lamp with commercial high-power-factor ballasts.

(3) A manufacturer may market and distribute a lamp in a manner designed to minimize use of the lamp with commercial high-power-factor ballasts by:

(A) packaging and labeling the lamp in a manner that clearly indicates the lamp is for residential use only and includes appropriate instructions concerning proper and improper use; if the lamp is included in a catalog or price list that also includes commercial/industrial lamps, listing the lamp in a separate residential section accompanied by notes about proper use on the same page; and providing as part of any express warranty accompanying the lamp that improper use voids such warranty; or

(B) using other comparably effective measures to minimize use with commercial high-power-factor ballasts.

"Rough service lamp" means a lamp that:

(1) has a minimum of 5 supports with filament configurations that are C-7A, C-11, C-17, and C-22 as listed in Figure 6-12 of the 9th edition of the IESNA Lighting Handbook, or similar configurations where lead wires are not counted as supports; and

(2) is designated and marketed specifically for 'rough service' applications, with:

(A) the designation appearing on the lamp packaging; and

(B) marketing materials that identify the lamp as being for rough service.

"Self-ballasted compact fluorescent lamp" means a compact fluorescent lamp unit that incorporates, permanently enclosed, all elements that are necessary for the starting and stable operation of the lamp, and does not include any replaceable or interchangeable parts.

"Shatter-resistant lamp, shatter-proof lamp, or shatter-protected lamp" means a lamp that:

(1) has a coating or equivalent technology that is compliant with the NSF/ANSI 51 and is designed to contain the glass if the glass envelope of the lamp is broken; and

(2) is designated and marketed for the intended application, with:

(A) the designation on the lamp packaging; and

(B) marketing material that identify the lamp as being shatter-resistant, shatter-proof, or shatter-protected.

"Showcase lamp" means a lamp that has a tubular bulb with a conventional screw base. The longer lamps have filaments with supports similar to linear incandescent lamps. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a showcase lamp.

"Sign service lamp" means a lamp of the vacuum type or gas-filled with sufficiently low bulb temperature to permit exposed outdoor use on high-speed flashing circuits. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a sign service lamp.

"Silver Bowl lamp" means a lamp that has a reflective coating applied directly to part of the bulb surface and that reflects light in a backward direction toward the lamp base. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a silver bowl lamp or similar designation.

“Slimline lamp” means a straight tubular-shaped instant start lamp with single pin bases of nominal overall length of 96 inches and a rated wattage of 52 or more, as defined in ANSI C78.81-2003.

“Soft white type lamp” means a lamp that emits diffuse illumination that produces soft-edged, poorly defined shadows on the background when an object is positioned in its emissive path. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a soft white lamp.

“Specialty application mercury vapor lamp ballast” means a mercury vapor lamp ballast that:

(1) is designed and marketed for operation of mercury vapor lamps used in quality inspection, industrial processing, or scientific use, including fluorescent microscopy and ultraviolet curing; and

(2) in the case of a specialty application mercury vapor lamp ballast, the label of which:

(A) provides that the specialty application mercury vapor lamp ballast is “For specialty applications only, not for general illumination”; and

(B) specifies the specific applications for which the ballast is designed.

“State-regulated general service incandescent lamp” means a standard incandescent or halogen type lamp that: is intended for general service applications; has a medium screw base; has a wattage rating no less than 25 watts and no greater than 150 watts; has a rated voltage range at least partially within 110 and 130 volts; has a A-15, A-19, A-21, A-23, A-25, PS-25, PS-30, BT-14.5, BT-15, CP-19, TB-19, CA-22, or equivalent shape as defined in ANSI C78.20-2003; and has a bulb finish of the frosted, clear, or soft white type. The following incandescent lamps are not state-regulated general service incandescent lamps: appliance, black light, bug, colored, infrared, left-hand thread, marine, marine signal service, mine service, plant light, reflector, rough service, shatter resistant, sign service, silver bowl, showcase, three-way, traffic signal, and vibration service or vibration resistant.

“State-regulated incandescent reflector lamp” means a lamp that is not colored or designed for rough or vibration service applications, that contains an inner reflective coating on the outer bulb to direct the light, a E26 medium screw base, that has a rated voltage or voltage range that lies at least partially within 115 to 130 volts, and that is either:

(1) a BR or ER bulb shape with a diameter 2.25 inches or more;

(2) a R, PAR, BR or similar bulb shape and which has a diameter of 2.25 to 2.75 inches.

“Three-way lamp” includes an incandescent lamp that employs two filaments, operated separately and in combination, to provide three light levels. The designation shall be on the lamp packaging, and marketing materials shall identify the lamp as being a three-way lamp.

"U-shaped lamp" means a tubular U-shaped fluorescent lamp with a medium bi-pin base with a nominal overall length between 22 and 25 inches and a rated wattage of 28 or more.

"Vibration service lamp" means a lamp that:

(1) has filament configurations that are C-5, C-7A, or C-9, as listed in Figure 6-12 of the 9th Edition of the IESNA Lighting Handbook or similar configurations;

(2) has a maximum wattage of 60 watts;

(3) is sold at retail in packages of two lamps or less; and

(4) is designated and marketed specifically for vibration service or vibration-resistant applications with:

(A) the designation appearing on the lamp packaging; and

(B) marketing materials that identify the lamp as being vibration service only.

"Voltage range" means a band of operating voltages as marked on an incandescent lamp, indicating that the lamp is designed to operate at any voltage within the band.

(l) Emergency Lighting and Self-Contained Lighting Controls.

"Astronomical time-switch control" means an automatic time-switch control device capable of controlling lighting based on the time of day and astronomical events such as sunset and sunrise, accounting for geographic location and date of the year.

"Automatic daylight control" means a self-contained lighting control device that automatically adjusts lighting levels by using one or more photosensors to detect changes in daylight illumination and then changing the electric lighting level in response to the changes in daylight.

"Automatic time-switch control" means a self-contained lighting control device that controls lighting based on the time of day.

"Average Luminance" means the arithmetic mean of all points measured on a surface.

"Dimmer" means a self-contained lighting control device that varies the electric light lumen output in order to change the level of illumination and energy use.

"DIP switch" means one of a set of small on-off switches mounted inside a self-contained lighting control that modifies the functionality of the lighting control.

"Edge-lit exit sign" means an illuminated exit sign in which lettering etched into a glass, plastic, or similar panel is illuminated through the edge of the panel and in which the lettering and the background are luminous.

"Electroluminescent light source" means a solid-state device which produces light when an electric current is passed through a phosphor-impregnated material.
"Face" means an illuminated side of an illuminated exit sign.

"Illuminated exit sign" means a sign that:

(1) is designed to be permanently fixed in place to identify an exit; and

(2) consists of:

(A) an electrically powered integral light source that illuminates the legend "EXIT" and any directional indicators; and

(B) provides contrast between the legend, any directional indicators, and the background.

"Input power" means the rate of electricity consumption, in watts, of an illuminated exit sign.

"Input power demand" means the amount of power required to continuously illuminate an exit sign model, measured in watts. For exit sign models with rechargeable batteries, input power demand shall be measured with batteries at full charge.

"Lighting control system" means a lighting control in which two or more components are required to be installed in the field to provide all of the functionality required to make a fully functional and compliant lighting control. Lighting control systems are regulated under Sections 119 and 134 of Title 24 of the California Code of Regulations.

"Luminance" means a measure of the brightness of a luminous surface.

"Luminance contrast" means the relative brightness of an object against its background.

"Matrix illuminated exit sign" means an illuminated exit sign that uses an array of small light sources, such as LEDs, to form the lettering of a sign.

"Maximum to minimum luminance ratio" means the ratio of maximum to minimum luminance where the luminance should be uniform.

"Occupant sensing device" means a self-contained lighting control that automatically controls light, allows for complete manual operation, and includes the following devices:

(1) "Motion sensor," which means an occupant sensing device that is used outdoors, automatically turns lights off when an area is vacated, and automatically turns the lights on when the area is occupied.

(2) "Occupancy sensor," which means an occupant sensing device that is used indoors and automatically turns lights off when an area is vacated and is capable of automatically turning lights on when an area is occupied.

(3) "Partial off," which means a motion sensor or occupancy sensor that automatically turns off part of the lighting load when an area is vacated and is capable of automatically turning on the lighting load when an area is occupied.

(4) "Partial on," which means a motion sensor or occupancy sensor that automatically turns lights off when an area is vacated and is capable of automatically and manually turning on part of the lighting load when an area is occupied.

(5) "Vacancy sensor," which means an occupant sensing device that automatically turns lights off when an area is vacated but requires lighting loads to be turned on manually.

"Panel-type exit sign" means an illuminated exit sign in which a translucent panel diffuses a light source and in which both the lettering and background are luminous.

"Photo control" means an automatic daylight control device that automatically turns lights on and off, or automatically adjusts lighting levels, in response to the amount of daylight that is available. A photo control may also be one component of a field-assembled lighting system, the component having the capability to provide a signal proportional to the amount of daylight to a lighting control system for the purpose of dimming electric lights.

"Photometric measurements" means the measurements of luminance levels made on the face of the sign.

"Self-contained lighting control" means a unitary lighting control module where no additional components are required for it to be a fully functional lighting control. Self-contained lighting control includes an astronomical time-switch control; an automatic daylight control; an automatic time-switch control; a dimmer; a photo control; or an occupant sensing device.

"Stencil illuminated exit sign" means an illuminated exit sign in which an opaque panel conceals the light source and in which only translucent lettering is luminous.

"Wall box dimmer" means a dimmer manufactured and intended to be mounted inside an electrical box within a wall.

(m) Traffic Signal Modules and Traffic Signal Lamps.

"Power consumption" means the power consumption, in watts, of a traffic signal module or a traffic signal lamp.

"Traffic signal lamp" means a lamp that is designed with lifetime, wattage, focal length, filament configuration, mounting, lamp glass, and lamp base characteristics appropriate for use in traffic signals.

"Traffic signal module for vehicle control" means a standard 8-inch (200 mm) or 12-inch (300 mm) round traffic signal indication that:

(1) consists of a light source, a lens, and all other parts necessary for operation; and

(2) communicates movement messages to drivers through red, amber, green colors.

"Traffic signal module for pedestrian control" means a traffic signal module that conveys movement information to pedestrians.

(n) Luminaires and Torchieres.

"Art work luminaire" means a luminaire designed only to be mounted directly to art work only for the purpose of illuminating that art work.

"Automatic daylight control" is a control that automatically reduces lighting in response to available daylight. This control typically uses photosensors to detect changes in daylight illumination and then change the electric lighting level in response to the daylight changes.

"Color correlated temperature (CCT)" means the color appearance, or actual color of the lamp in accordance with IESNA LM-16-1993.

"Compact fluorescent lamp" means a fluorescent lamp typically designed to replace general service incandescent lamps, but may include sizes that replace conventional linear fluorescent lamps in smaller luminaires, and are typically less than 24 inches in length. "Fluorescent lamp" is defined in Section 1602(k) of this Article.

"Dedicated fluorescent lamp socket" means one of the ANSI designated type of fluorescent lamp sockets that will accept only a compact or linear fluorescent lamp, and that is used in luminaires where the ballast is permanently installed in the luminaire between the power cord and the lamp socket. "Dedicated fluorescent lamp socket" does not include sockets where the ballast is located between the socket and the lamp, or where the ballast is integrated into the lamp.

"E12 screw-based socket" means an ANSI designation for a screw-base socket commonly referred to as a candelabra screw-base.

"E17 screw-based socket" means an ANSI designation for a screw-base socket commonly referred to as an intermediate screw-base.

"E26 screw-based socket" means an ANSI designation for a screw-base socket commonly referred to as a medium screw-base.

"General lighting application" means lighting that provides an interior or exterior area with overall illumination.

"GU-24" means the designation of a lamp holder and socket configuration, based on a coding system by the International Energy Consortium: "G" indicates the broad type of two or more projecting contacts, such as pins or posts; "U" distinguishes between lamp and holder designs of similar type that are not interchangeable due to electrical or mechanical requirements; and "24" indicates 24 millimeter center to center spacing of electrical contact posts."

"GU-24 adaptor" means a one-piece device, pig-tail, wiring harness, or other such socket/base attachment that connects to a GU-24 socket on one end and provides a different type of socket or connection on the other end; a GU-24 adaptor does not alter the voltage. A fluorescent ballast with a GU-24 base is not a GU-24 adaptor.

"High frequency electronic ballast" means a fluorescent lamp ballast having an output frequency of no less than 20kHz. "Fluorescent lamp ballast" is defined in Section 1602(j) of this Article.

"Indoor metal halide luminaire" is a metal halide luminaire that is not an outdoor metal halide luminaire.

"Integral control" means a fully functional occupancy sensor or automatic daylight control system for which all required components for an integral control, including control devices, sensors, and wiring, are factory installed, packaged and sold with each individual luminaire, and are integrated into each individual luminaire at the factory in one of the following three methods:

(1) Is integrated directly into the luminaire housing and hardwired to the lighting system; or

(2) Is pre-wired to allow proper functionality between the control and luminaire, and to allow remote mounting of the control. One end of the wiring shall be pre-wired to the luminaire, and the other end shall be prewired to the control. The wiring may be either a metal or fiber conductor. The wiring may allow temporary disconnection in the field to allow remote mounting of the control; or

(3) Is pre-wired with a wireless radio controlled sensor to allow proper functionality between the control and luminaire, and to allow interaction with the wireless control signal in the lighting system.

"Lamp-ballast system efficiency" means the efficiency of a lamp and ballast combination expressed as a percentage and calculated by dividing the output circuit lamp power by the input circuit power as measured in accordance with ANSI C82.6-2005 (American National Standard for Ballasts for High-Intensity Discharge Lamps – Methods of Measurement).

"LED light engine" or "LED light engine with integral heat sink" (also known as an LED light source system) means a subsystem of an LED luminaire that includes one or more LED components, including an LED driver (power source), electrical and mechanical interfaces, and an integral heat sink to provide thermal dissipation. An LED source system may be designed to accept additional components that provide aesthetic, optical, and environmental control (other than thermal dissipation).

"LED luminaire" means a complete lighting unit consisting of an LED light source, meaning one or more LED lamps or LED light engines, together with parts to distribute light, to position and protect the light source, and to connect the light source to the electrical power.

"Luminaire efficacy" for LEDs means the luminous efficacy of the LED luminaire, or of the LED light engine with integral heat sink, when tested in accordance with IESNA LM-79-08.

"Metal halide ballast" means a ballast used to start and operate metal halide lamps.

"Metal halide lamp" means a high-intensity discharge lamp in which the major portion of the light is produced by radiation of metal halides and their products of dissociation, possibly in combination with metallic vapors.

"Metal halide lamp fixture" or "Metal halide luminaire" means a light fixture for general lighting application designed to be operated with a metal halide lamp and a ballast for a metal halide lamp.

"Occupant sensor, lighting" is a device that automatically reduces lighting or turns lights off soon after an area is vacated.

"Outdoor metal halide luminaire" means a metal halide luminaire that is UL 1598 Wet Location Listed and labeled "Suitable for Wet Locations" as specified by the National Electrical Code 2005, Section 410.4(A).
"Portable floor luminaire" means a portable luminaire designed to be located on the floor and not located on a table, desk, or other structure above the floor.

"Portable luminaire" means a luminaire that has a flexible cord and an attachment plug for connection to a nominal 120-volt, 15- or 20-ampere branch circuit; that allows the user to relocate the luminaire without any rewiring; that are typically controlled with a switch located on the luminaire itself or on the power cord; and that are intended for use in accordance with the National Electrical Code, ANSI/NFPA 70-2002. Portable luminaire does not include direct plug-in nightlights, sun and heat lamps, aquarium lamps, medical and dental lights, portable electric hand lamps, signs and commercial advertising displays, photographic lamps, germicidal lamps, or portable luminaires for marine use or for use in hazardous locations as defined in the National Electrical Code, ANSI/NFPA 70. Portable luminaire also does not include Christmas tree and decorative lighting outfits or electric candles and candelabras without lamp shades that are covered by the Standard for Christmas Tree and Decorative Outfits, UL 588.

"Portable table luminaire" means a portable luminaire designed to be located on a table, desk, or other structure above the floor.

"Probe-start metal halide ballast" means a ballast that:

(1) starts a probe-start metal halide lamp that contains a third starting electrode (probe) in the arc tube; and

(2) does not generally contain an igniter but instead starts lamps with high ballast open circuit voltage.

"Pulse-start metal halide ballast" means an electronic or electromagnetic ballast that starts a pulse-start metal halide lamp with high voltage pulses. lLamps shall be started by first providing a high voltage pulse for ionization of the gas to produce a glow discharge. To complete the starting process, power shall be provided by the ballast to sustain an arc through a glow-to-arc transition.

"System input power rating" means the operating input wattage of the rated lamp/ballast combination published in manufacturer's catalogs based on independent testing lab reports as specified by "Standards for Luminaire" UL 1598.

"Torchiere" means a portable electric lamp with a reflector bowl that directs light upward to give indirect illumination.

"Under-cabinet luminaire" means a luminaire designed for mounting in, on, under, or within modular office furniture.

"Wall mount adjustable luminaire" means a portable luminaire that is designed only to be mounted on a wall, having no base which will allow the luminaire to stand on a horizontal surface.

(o) Dishwashers.

"Compact dishwasher" means a dishwasher that has a capacity of less than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 using 10 CFR, Part 430, Appendix C of Subpart B (2008).
"Cycle" means a sequence of operations of a dishwasher that performs a complete dishwashing operation, and that may include variations or combinations of the functions of washing, rinsing, and drying.

"Dishwasher" means a cabinet-like appliance that with the aid of water and detergent, washes, rinses, and dries (when a drying process is included) dishware, glassware, eating utensils, and cooking utensils by chemical, mechanical, or electrical means, and discharges to a plumbing drainage system.

"Energy factor" of a dishwasher means cycles per kWh, as determined using the applicable test method in Section 1604(o).

"Standard dishwasher" means a dishwasher that has a capacity equal to or greater than eight place settings plus six serving pieces as specified in ANSI/AHAM DW-1 using 10 CFR, Part 430, Appendix C of Subpart B (2008).

"Truncated normal cycle" means the normal cycle interrupted to eliminate the power-dry feature after the termination of the last rinse option.

"Water heating dishwasher" means a dishwasher that, as recommended by the manufacturer, is designed for heating cold inlet water (nominal 50°F) or designed for heating water with a nominal inlet water temperature of 120°F. Any dishwasher designated as water-heating (50°F or 120°F inlet water) must provide internal water heating to above 120°F in at least one phase of the normal cycle.

(p) Clothes Washers.

"Automatic clothes washer" means a clothes washer that has a control system that is capable of scheduling a pre-selected combination of operations, such as regulation of water temperature, regulation of the water fill level, and performance of wash, rinse, drain, and spin functions without the need for user intervention subsequent to the initiation of machine operation. Some models may require user intervention to initiate these different segments of the cycle after the machine has begun operation, but they do not require the user to intervene to regulate the water temperature by adjusting the external water faucet valves.

"Clothes washer" means an appliance designed to clean clothes, utilizing a water solution of soap or detergent and mechanical agitation or other movement.

"Commercial clothes washer" means a soft mount front-loading or soft mount top-loading clothes washer with clothes container compartment no greater than 3.5 ft^3 for horizontal-axis clothes washers, or no greater than 4.0 ft^3 for vertical-axis clothes washers, that is designed for use in:

(1) applications where the occupants of more than one household will be using it, such as multi-family housing common areas and coin laundries; or

(2) other commercial applications.

"Compact clothes washer" means a clothes washer of less than 1.6 ft^3 in clothes container compartment capacity.

"Cycle" means a sequence of operations of a clothes washer that performs a complete washing operation.
"Energy factor" of a clothes washer means ft^3 per kWh per cycle, as determined using the applicable test method in Section 1604(p).

"Front-loading clothes washer" means a clothes washer with the clothes container compartment access located on the front of the machine.

"Modified energy factor (MEF)" of a clothes washer means the quotient of the ft^3 capacity of the clothes container divided by the total clothes washer energy consumption per cycle, with such energy consumption expressed as the sum of the machine electrical energy consumption, the hot water energy consumption, and the energy required for removal of the remaining moisture in the wash load, as determined using the applicable test method in Section 1604(p).

"Other clothes washer" means a class of clothes washer which is not an automatic or semi-automatic clothes washer.

"Semi-automatic clothes washer" means a clothes washer that is the same as an automatic clothes washer except that user intervention is required to regulate the water temperature by adjusting the external water faucet valves.

"Soft mount clothes washer" means a clothes washer that does not require mechanical fastening to a floor for proper operating performance under typical commercial clothes washer applications.

"Standard clothes washer" means a clothes washer of 1.6 ft^3 or more in clothes container compartment capacity.

"Suds-saving" means a feature or option on a clothes washer which allows the user to store used wash water in an external laundry tub for use with subsequent wash loads.

"Top-loading clothes washer" means a clothes washer with the clothes container compartment access located on the top of the machine.

"Water factor" means the quotient of the total weighted per-cycle water consumption divided by the capacity of the clothes washer, determined using the applicable test method in Section 1604(p).

(q) Clothes Dryers.

"Automatic termination control" means a dryer control system with a sensor which monitors either the dryer load temperature or its moisture content and with a controller which automatically terminates the drying process. A mark or detent which indicates a preferred automatic termination control setting must be present if the dryer is to be classified as having an "automatic termination control". A mark is a visible single control setting on one or more dryer controls.

"Clothes dryer" means a cabinet-like appliance that is designed to dry fabrics in a tumble-type drum with forced air circulation and that has a drum and a blower driven by an electric motor.

"Compact clothes dryer" means a clothes dryer with a drum capacity less than 4.4 ft^3.

"Electric clothes dryer" means a clothes dryer whose heat source is electricity.
"Energy factor" of a clothes dryer means pounds of clothes dried per kWh, as determined using the applicable test method in Section 1604(q).

"Gas clothes dryer" means a clothes dryer whose heat source is gas and the drum and blower(s) are driven by an electric motor(s).

"Standard clothes dryer" means a clothes dryer with a drum capacity of 4.4 ft^3 or greater.

(r) Cooking Products and Food Service Equipment.

"Commercial convection oven" means an appliance that is not a consumer product and that is designed for cooking food by forcing hot air over it using a fan in a closed cavity.

"Commercial hot food holding cabinet" means a heated, fully enclosed compartment, with one or more solid or partial glass doors, that is designed to maintain the temperature of hot food that has been cooked in a separate appliance. "Commercial hot food holding cabinet" does not include heated glass merchandising cabinets, drawer warmers or cook-and-hold appliances.

"Commercial range top" means an appliance that is not a consumer product and that is designed for cooking food by direct or indirect heat transfer from one or more cooking units to one or more cooking containers.

"Conventional cooking top" means a class of kitchen ranges and ovens which is a household cooking appliance consisting of a horizontal surface containing one or more surface units which include either a gas flame or electric resistance heating.

"Conventional oven" means a class of kitchen ranges and ovens which is a household cooking appliance consisting of one or more compartments intended for the cooking or heating of food by means of either a gas flame or electric resistance heating. It does not include portable or countertop ovens which use electric resistance heating for the cooking or heating of food and are designed for an electrical supply of approximately 120 volts.

"Conventional range" means a class of kitchen ranges and ovens which is a household cooking appliance consisting of a conventional cooking top and one or more conventional ovens.

"Convertible cooking appliance" means any kitchen range and oven which is a household cooking appliance designed by the manufacturer to be changed in service from use with natural gas to use with LP-gas, and vice versa, by incorporating in the appliance convertible orifices for the main gas burners and a convertible gas pressure regulator.

"Cook-and-hold" appliance means a multiple-mode appliance intended for cooking food that may be used to hold the temperature of the food that has been cooked in the same appliance.

"Cooking products" means consumer products that are used as the major household cooking appliances. They are designed to cook or heat different types of food by one or more of the following sources of heat: gas, electricity, or microwave energy. Each product may consist of a horizontal cooking top containing one or more surface units or one or more heating compartments. They must be one of the following classes: conventional ranges, conventional cooking tops, conventional ovens, microwave ovens, microwave/conventional ranges, and other cooking products.

"Drawer warmer" means an appliance that consists of one or more heated drawers and that is designed to hold hot food that has been cooked in a separate appliance at a specified temperature.

"Food service equipment" means a commercial hot food holding cabinet, a commercial convection oven, or a commercial range top.

"Heated glass merchandising cabinet" means an appliance with a heated cabinet constructed of glass or clear plastic doors which, with 70% or more clear area, is designed to display and maintain the temperature of hot food that has been cooked in a separate appliance.

"Major cooking component" means either a conventional cooking top, a conventional oven or a microwave oven.

"Microwave/conventional range" means a class of kitchen ranges and ovens which is a household cooking appliance consisting of a microwave oven, a conventional oven, and a conventional cooking top.

"Microwave oven" means a class of kitchen ranges and ovens which is a household cooking appliance consisting of a compartment designed to cook or heat food by means of microwave energy.

"Other cooking products" means any class of cooking products other than the conventional range, conventional cooking top, conventional oven, microwave oven, and microwave/conventional range classes.

"Surface unit" means either a heating unit mounted in a cooking top, or a heating source and its associated heated area of the cooking top, on which vessels are placed for the cooking or heating of food.

(s) Electric Motors.

"Average full load efficiency" means the arithmetic mean of the full load efficiencies of a population of electric motors of duplicate design, where the full load efficiency of each motor in the population is the ratio (expressed as a percentage) of the motor's useful power output to its total power input when the motor is operated at its full rated load, rated voltage, and rated frequency.

"Closed motor" means an enclosed motor.

"Definite purpose motor" means any motor designed in standard ratings with standard operating characteristics or standard mechanical construction for use under service conditions other than usual or for use on a particular type of application and which cannot be used in most general purpose applications.

"Efficiency" of an electric motor means the ratio of an electric motor's useful power output to its total power input, expressed in percentage.
"Electric motor" has the meaning described in (1) – (3) immediately below:

(1) "Electric motor" means a machine which converts electrical power into rotational mechanical power and which:

(A) is a general purpose motor including but not limited to motors with explosion-proof construction;

(B) is a single speed, induction motor (MG1);

(C) is rated for continuous duty (MG1) operation or is rated duty type S1 (IEC);

(D) contains a squirrel-cage (MG1) or cage (IEC) rotor and has foot-mounting, including foot-mounting with flanges or detachable feet;

(E) is built in accordance with NEMA T-frame dimensions (MG1) or IEC metric equivalents (IEC);

(F) has performance in accordance with NEMA Design A (MG1) or B (MG1) characteristics or equivalent designs such as IEC Design N (IEC); and

(G) operates on polyphase alternating current 60-Hertz sinusoidal power, and:

1. is rated 230 volts or 460 volts, or both, including any motor that is rated at multi-voltages that include 230 volts or 460 volts; or

2. can be operated on 230 volts or 460 volts, or both.

(2) Terms in this definition followed by the parenthetical "MG1" must be construed with reference to provisions in NEMA Standards Publication MG1-1993, *Motors and Generators*, with Revisions 1, 2, 3, and 4, as follows:

(A) Section I, *General Standards Applying to All Machines*, part 1, *Referenced Standards and Definitions*, paragraphs 1.16.1, 1.16.1.1, 1.17.1.1, 1.17.1.2, and 1.40.1 pertain to the terms "induction motor," "squirrel-cage," "NEMA Design A," "NEMA Design B," and "continuous duty" respectively;

(B) Section I, *General Standards Applying to All Machines*, Part 4, *Dimensions, Tolerances, and Mounting*, paragraph 4.01 and Figures 4-1, 4-2, 4-3, and 4-4 pertain to "NEMA T-frame dimensions;"

(C) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 11, *Dimensions-AC and DC Small and Medium Machines*, paragraphs 11.01.2, 11.31 (except the lines for frames 447T, 447TS, 449T and 449TS), 11.32, 11.34 (except the line for frames 447TC and 449TC, and the line for frames 447TSC and 449TSC), 11.35, and 11.36 (except the line for frames 447TD and 449TD, and the line for frames 447TSD and 449TSD), and Table 11-1, pertain to "NEMA T-frame dimensions;" and

(D) Section II, *Small (Fractional) and Medium (Integral) Machines*, Part 12, *Tests and Performance-AC and DC Motors*, paragraphs 12.35.1, 12.35.5, 12.38.1, 12.39.1, and

12.40.1, and Table 12-2, pertain both to "NEMA Design A" and "NEMA Design B."

(3) Terms in this definition followed by the parenthetical "IEC" must be construed with reference to provisions in IEC Standards as follows:

(A) IEC Standard 60034-1 (1996), *Rotating Electrical Machines*, Part 1: *Rating and Performance*, with Amendment 1 (1997), Section 3: *Duty*, clause 3.2.1 and figure 1 pertain to "duty type S1";

(B) IEC Standard 60050-411 (1996), *International Electrotechnical Vocabulary Chapter 411: Rotating Machines*, Sections 411-33-Q7 a+nd 411-37-26, pertain to "cage";

(C) IEC Standard 60072-1 (1991), *Dimensions and Output Series for Rotating Electrical Machines-Part 1: Frame Numbers 56 to 400 and Flange Numbers 55 to 1080,* clauses 2, 3, 4.1, 6.1, 7, and 10, and Tables 1, 2, and 4, pertain to "IEC metric equivalents" to "T-frame" dimensions; and

(D) IEC Standard 60034-12 (1980), *Rotating Electrical Machines, Part 12: Starting Performance of Single-Speed Three-Phase Cage Induction Motors for Voltages Up to and Including 660 V,* with Amendment 1 (1992) and Amendment 2 (1995), clauses 1, 2, 3.1, 4, 5, and 6, and Tables I, II, and III, pertain to "IEC Design N."

"Enclosed motor" means an electric motor constructed so as to prevent the free exchange of air between the inside and outside of the case but not sufficiently closed to be termed airtight.

"General purpose motor" means any motor which is designed in standard ratings with either:

(1) Standard operating characteristics and standard mechanical construction for use under usual service conditions, such as those specified NEMA Standards Publication MG1–1993, paragraph 14.02, "Usual Service Conditions," (incorporated by reference in 10 CFR section 431.15 (2008)) and without restriction to a particular application or type of application; or

(2) Standard operating characteristics or standard mechanical construction for use under unusual service conditions, such as those specified in NEMA Standards Publication MG1–1993, paragraph 14.03, "Unusual Service Conditions," (incorporated by reference in 10 CFR section 431.15 (2008)) or for a particular type of application, and which can be used in most general purpose applications.

"General purpose electric motor (subtype I)" means any motor that meets the definition of "General Purpose" as established in the final rule issued by the U.S. Department of Energy entitled "Energy Efficiency Program for Certain Commercial and Industrial Equipment: Test Procedures, Labeling, and Certification Requirements for Electric Motors" (10 CFR 431 (2008)), as in effect on December 19, 2007.

"General purpose electric motor (subtype II)" means motors incorporating the design elements of a general purpose electric motor (subtype I) that are configured as one of the following:

(1) A U-Frame Motor.

(2) A Design C Motor.

(3) A close-coupled pump motor.

(4) A Footless motor.

(5) A vertical solid shaft normal thrust motor (as tested in a horizontal configuration).

(6) An 8-pole motor (900 RPM).

(7) A poly-phase motor with voltage of not more than 600 volts (other than 230 or 460 volts).

"IEC" means the International Electrotechnical Commission.

"Input power" means the full-load power input required to operate the motor.

"Multi-voltage electric motor" means an electric motor that is capable of operating at:

(1) 230 volts and another voltage other than 460 volts,

(2) 460 volts and at another voltage other than 230 volts, or

(3) both 230 volts and 460 volts and another voltage.

"Nominal full load efficiency" means, with respect to an electric motor, a representative value of efficiency selected from Column A of Table 12–8, NEMA Standards Publication MG1–1993, (incorporated by reference in 10 CFR section 431.15 (2008)), that is not greater than the average full load efficiency of a population of motors of the same design.

"Open motor" means a motor having ventilating openings which permit passage of external cooling air over and around the windings of the machine.

"Special purpose motor" means any motor, other than a general purpose motor or definite purpose motor, which has special operating characteristics or special mechanical construction, or both, designed for a particular application.

"Total power loss" means that portion of the energy used by an electric motor not converted to rotational mechanical power, expressed in percent.

(t) Distribution Transformers.

"Autotransformer" means a transformer in which the primary and secondary windings are not electrically isolated, and with at least a portion of the secondary voltage derived from the primary winding that:

(1) has one physical winding that consists of a series winding part and a common winding part;

(2) has no isolation between its primary and secondary circuits; and

(3) during step-down operation, has a primary voltage that is equal to the total of the series and common winding voltages, and a secondary voltage that is equal to the common winding voltage.

"BIL" means basic impulse isolation level.

"Distribution transformer" means a transformer that:

(1) has an input voltage of 34.5 kV or less;

(2) has an output voltage of 600 V or less;

(3) is rated for operation at a frequency of 60 Hz; and

(4) has a capacity of 10 kVA to 2500 kVA for liquid-immersed units and 15 kVA to 2500 kVA for dry-type units; but

(5) the term "distribution transformer" does not include a transformer that is an:

(A) autotransformer;

(B) drive (isolation) transformer;

(C) grounding transformer;

(D) machine-tool (control) transformer;

(E) nonventilated transformer;

(F) rectifier transformer;

(G) regulating transformer;

(H) sealed transformer;

(I) special-impedance transformer;

(J) testing transformer;

(K) transformer with tap range of 20 percent or more;

(L) uninterruptible power supply transformer; or

(M) welding transformer.

"Drive (isolation) transformer" means a transformer that:

(1) isolates an electric motor from the line;

(2) accommodates the added loads of drive-created harmonics; and

(3) is designed to withstand the additional mechanical stresses resulting from an alternating current adjustable frequency motor drive or a direct current motor drive.

"Efficiency of distribution transformer" means the ratio of power output to power input, expressed as a percent, as determined using the applicable test method in Section 1604(t).

"Grounding transformer" means a three-phase transformer intended primarily to provide a neutral point for system-grounding purposes, either by means of:

(1) a grounded wye primary winding and a delta secondary winding; or

(2) a transformer with its primary winding in a zig-zag winding arrangement, and with no secondary winding.

"Harmonic transformer" means a transformer that is designed to supply loads with higher than normal harmonic current levels and that has a K-rating of K-4 or greater.

"Impedance transformer" means a transformer that has a specified impedance less than 4 percent or greater than 8 percent.

"kVa" means kilovolt-ampere, which is the designation for the apparent power of a circuit.

”Liquid-immersed distribution transformer” means a distribution transformer in which the core and coil assembly is immersed in an insulating liquid.

“Low voltage dry-type distribution transformer” means a distribution transformer that has an input voltage of 600 volts or less, that is air-cooled, and that does not use oil as a coolant.

“Machine-tool (control) transformer” means a transformer that is equipped with a fuse or other over-current protection device, and is generally used for the operation of a solenoid, contactor, relay, portable tool, or localized lighting.

”Medium-voltage dry-type distribution transformer” means a distribution transformer in which the core and coil assembly is immersed in a gaseous or dry-compound insulating medium, and which has a rated primary voltage between 601 V and 34.5 kV.

“Nonventilated transformer” means a transformer constructed so as to prevent external air circulation through the coils of the transformer while operating at zero gauge pressure.

“Rectifier transformer” means a transformer that operates at the fundamental frequency of an alternating-current system and that is designed to have one or more output windings connected to a rectifier.

“Regulating transformer” means a transformer with automatic tap changers.

“Sealed transformer” means a transformer designed to remain hermetically sealed under specified conditions of temperature and pressure.

“Special-impedance transformer” means any transformer built to operate at an impedance outside of the normal impedance range for that transformer's kVA rating. The normal impedance range for each kVA rating for liquid-immersed and dry-type transformers is shown in Tables 1 and 2, respectively.

Table T-1
Normal Impedance Ranges for Liquid-Immersed Transformers

Single-phase		*Three-phase*	
kVA	***Impedance (%)***	***kVA***	***Impedance (%)***
10	1.0–4.5	15	1.0–4.5
15	1.0–4.5	30	1.0–4.5
25	1.0–4.5	45	1.0–4.5
37.5	1.0–4.5	75	1.0–5.0
50	1.5–4.5	112.5	1.2–6.0
75	1.5–4.5	150	1.2–6.0
100	1.5–4.5	225	1.2–6.0
167	1.5–4.5	300	1.2–6.0
250	1.5–6.0	500	1.5–7.0
333	1.5–6.0	750	5.0–7.5
500	1.5–7.0	1000	5.0–7.5
667	5.0–7.5	1500	5.0–7.5
833	5.0–7.5	2000	5.0–7.5
		2500	5.0–7.5

Table T-2
Normal Impedance Ranges for Dry-Type Transformers

Single-phase		*Three-phase*	
kVA	*Impedance (%)*	*kVA*	*Impedance (%)*
15	1.5–6.0	15	1.5–6.0
25	1.5–6.0	30	1.5–6.0
37.5	1.5–6.0	45	1.5–6.0
50	1.5–6.0	75	1.5–6.0
75	2.0–7.0	112.5	1.5–6.0
100	2.0–7.0	150	1.5–6.0
167	2.5–8.0	225	3.0–7.0
250	3.5–8.0	300	3.0–7.0
333	3.5–8.0	500	4.5–8.0
500	3.5–8.0	750	5.0–8.0
667	5.0–8.0	1000	5.0–8.0
833	5.0–8.0	1500	5.0–8.0
		2000	5.0–8.0
		2500	5.0–8.0

"Testing transformer" means a transformer used in a circuit to produce a specific voltage or current for the purpose of testing electrical equipment.

"Transformer" means a device consisting of two or more coils of insulated wire and that transfers alternating current by electromagnetic induction from one coil to another to change the original voltage or current value.

"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.

"Uninterruptible power supply (UPS) transformer" means a transformer that is used within an uninterruptible power system, which in turn supplies power to loads that are sensitive to power failure, power sags, over voltage, switching transients, line noise, and other power quality factors.

"Welding transformer" means a transformer designed for use in arc welding equipment or resistance welding equipment.

(u) Power Supplies.

"Active mode" for federally regulated external power supplies and state-regulated external power supplies means the mode of operation when an external power supply is connected to the main electricity supply and the output is connected to a load.

"Class A external power supply" that is a federally regulated external power supply means an external power supply circuit that is used to convert household electric current into DC current or lower-voltage AC current to operate a consumer product and that:

(1) is designed to convert line voltage AC input into lower voltage AC or DC output;

(2) is able to convert to only one AC or DC output voltage at a time;

(3) is sold with, or intended to be used with, a separate end-use product that constitutes the primary load;

(4) is contained in a separate physical enclosure from the end-use product;

(5) is connected to the end-use product via a removable or hard-wired male/female electrical connection, cable, cord, or wiring; and

(6) has nameplate output power that is less than or equal to 250 watts.

The term "Class A external power supply" does not include a device that:

(A) requires Federal Food and Drug Administration listing and approval as a medical device in accordance with section 513 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 360c); or

(B) powers the charger of a detachable battery pack or charges the battery of a product that is fully or primarily motor operated.

"Computer" means an electronic machine which, by means of stored instructions and information, performs rapid, often complex calculations or compiles, correlates, and selects data.

"Digital camera" means an electronic device used to store images in an electronic format rather than storing the images on film.

"Federally regulated external power supply" means an external power supply circuit that is used to convert household electric current into DC current or lower-voltage AC current to operate a consumer product.

"Mobile phone" means a telephone that is not a wireline telephone.

"No-load mode" means the mode of operation when a Class A external power supply is connected to the main electricity supply and the output is not connected to a load.

"Personal digital assistant" (PDA) means a lightweight, hand-held computer used as a personal organizer.

"State-regulated external power supply" means a single-voltage external AC to DC or AC to AC power supply that:

(1) is designed to convert line voltage AC input into lower voltage DC or AC output;

(2) is able to convert to only one DC or AC output voltage at a time;

(3) is sold with, or intended to be used with, a separate end-use product that constitutes the primary load;

(4) is contained within a separate physical enclosure from the end-use product;

(5) is connected to the end-use product via a removable or hard-wired male/female electrical connection, cable, cord, or other wiring;

(6) does not have batteries or battery packs that physically attach directly (including those that are removable) to the power supply unit;

(7) does not have a battery chemistry or type selector switch and an indicator light; or, does not have a battery chemistry or type selector switch and a state of charge meter;

(8) has a nameplate output power less than or equal to 250 watts.

The term "state-regulated external power supply" does not include a device that is a "Class A external power supply" that is federally regulated.

"Wireline telephone" means a telephone that makes a connection to the telephone network by having a wire from the telephone's base plugged into a telephone jack on the wall, floor, or other location.

(v) Televisions, and Consumer Audio and Video Equipment.

"Aspect ratio" means the ratio of width to height of the viewable screen area. Common examples include 4:3 and 16:9.

"Audio standby-passive mode" means the appliance is connected to a power source, produces neither sound nor performs any mechanical function (e.g. playing, recording) but can be switched into another mode with the remote control unit or an internal signal.

"Automatic brightness control" means an integrated control system that automatically adjusts the brightness of a television based upon ambient lighting conditions.

"Combination TV" means a system in which a television or television monitor and an additional device or devices (including but not limited to a DVD player or VCR) are combined into a single unit in which the additional devices are included in the television casing;

"Component TV" means a television composed of two or more separate components (e.g., separate display device and tuner) marketed and sold as a television under one model or system designation. The system may have more than one power cord.

"Compact audio product", also known as a mini, mid, micro, or shelf audio system, means an integrated audio system encased in a single housing that includes an amplifier and radio tuner, attached or separable speakers, and can reproduce audio from one or more of the following media: magnetic tape, CD, DVD, or flash memory. "Compact audio product" does not include products that can be independently powered by internal batteries or that have a powered external satellite antenna, or that can provide a video output signal.

"Computer monitor" means an analog or digital device designed primarily for the display of computer generated signals and that is not marketed for use as a television.

"Digital versatile disc (DVD)" means a laser-encoded plastic medium capable of storing a large amount of digital audio, video, and computer data.

"Digital versatile disc (DVD) player" means a commercially-available electronic product encased in a single housing that includes an integral power supply and for which the sole purpose is the decoding of digitized video signals on a DVD.

"Digital versatile disc (DVD) recorder" means a commercially-available electronic product encased in a single housing that includes an integral power supply and for which the sole purpose is the production or recording of digitized video signals on a DVD. "DVD recorder" does not include models that have an EPG function.
"Digital video recorder (DVR)" means a device which can record video signals onto a hard disk drive or other device that can store the images digitally. "DVR" does not include models that have an EPG function."

"Download acquisition mode (DAM)" or "Standby-active mode" means the product is connected to a power source, produces neither sound nor a picture, and is downloading channel listing information according to a defined schedule for use by the electronic programming guide, monitoring for emergency messaging/communications or otherwise communicating through a network protocol. The power use in this mode is typically greater than the power requirement in TV standby-passive mode and less than the power requirement in on mode.

"Electronic programming guide (EPG)" means an application that provides an interactive, onscreen menu of TV listings, and that downloads program information from the vertical blanking interval of a regular TV signal.

"Forced menu" means a menu which requires the selection of a display mode by a user upon their first use after the manufacture of the television.

"Integrated occupancy sensor" means a feature built into a television capable of sensing presence and entering TV standby-passive mode or standby-active mode to save energy in an empty room.

"Native vertical resolution" means the physical pixel count for the vertical axis of the television. For example a television with a screen resolution of 1920 x 1080 would have a native vertical resolution of 1080.

"On mode" means the product is connected to a power source and produces sound and a picture. The power requirement in this mode is typically greater than the power requirement in standby-passive and download acquisition modes.

"Point of Deployment (POD)" means a card which enables a TV to have secure conditional access to a cable or satellite system.

"Retail on mode power" is the measurement of on mode power in the most consumptive mode available in a forced menu.

"Screen size" means the diagonal length from one corner to the corner furthest away of the viewable screen area of a television, measured in inches.

"Selected input mode" means the input port(s) selected which the television is using as a source to produce a visible or audible output. These modes are required for televisions with multiple possible inputs including but not limited to coaxial, composite, S-Video, HDMI, and component connectors.

"Television (TV)" means an analog or digital device designed primarily for the display and reception of a terrestrial, satellite, cable, Internet Protocol TV (IPTV), or other broadcast or recorded transmission of analog or digital video and audio signals. TVs include combination TVs, television monitors, component TVs, and any unit that is marketed to the consumer as a TV. "Television (TV)" does not include computer monitors.
"Television monitor" means a TV that does not have an internal tuner/receiver or playback device.

"TV standby-passive mode" means the television is connected to a power source, produces neither sound nor picture but can be switched into another mode with the remote control unit or via an internal signal.

"Viewable screen area" means the continuous total area of a television in square inches which displays a digital or analog video signal and is viewable to a consumer.

"Video Cassette Recorder (VCR)" means a commercially-available analog recording device that includes an integral power supply and which records television signals onto a tape medium for subsequent viewing.

"Video standby-passive mode" means the appliance is connected to a power source, does not perform any mechanical function (e.g. playing, recording), does not produce video or audio output signals but can be switched into another mode with the remote control unit or an internal signal.

(w) Battery Charger Systems.

"24 hour charge and maintenance energy" means the sum of the energy, in watt-hours, consumed by the battery charger system in charge and battery-maintenance mode when charging the battery over time periods as defined in the applicable test method in Section 1604(w). This time period may exceed 24 hours.

"À la carte charger" means a battery charger that is individually packaged without batteries. À la carte chargers include those with multi-voltage or multi-port capability.

"Battery" or "battery pack" means an assembly of one or more rechargeable cells intended to provide electrical energy to a product, and may be in one of the following forms: (a) detachable battery: a battery that is contained in a separate enclosure from the product and is intended to be removed or disconnected from the product for recharging; or (b) integral battery: a battery that is contained within the product and is not removed from the product for charging purposes.

"Battery analyzer" means a device:

(1) used to analyze and report a battery's performance and overall condition;

(2) capable of being programmed and performing service functions to restore capability in deficient batteries; and

(3) not intended or marketed to be used on a daily basis for the purpose of charging batteries.

"Battery backup" or "uninterruptible power supply charger (UPS)" means a small battery charger system that is voltage and frequency dependent (VFD) and designed to provide power to an end use product in the event of a power outage, and includes a UPS as defined in IEC 62040-3 ed.2.0 (March 2011). The output of the VFD UPS is dependent on changes in AC input voltage and frequency and is not intended to provide additional corrective functions, such as those relating to the use of tapped transformers.

"Battery charger system (BCS)" means a battery charger coupled with its batteries or battery chargers coupled with their batteries, which together are referred to as *battery charger systems*. This term covers all rechargeable batteries or devices incorporating a rechargeable battery and the chargers used with them. Battery charger systems include, but are not limited to:

(1) electronic devices with a battery that are normally charged from ac line voltage or dc input voltage through an internal or external power supply and a dedicated battery charger;

(2) the battery and battery charger components of devices that are designed to run on battery power during part or all of their operations;

(3) dedicated battery systems primarily designed for electrical or emergency backup; and

(4) devices whose primary function is to charge batteries, along with the batteries they are designed to charge. These units include chargers for power tool batteries and chargers for automotive, AA, AAA, C, D, or 9 V rechargeable batteries, as well as chargers for batteries used in larger industrial motive equipment and à la carte chargers.

(5) The charging circuitry of battery charger systems may or may not be located within the housing of the end-use device itself. In many cases, the battery may be charged with a dedicated external charger and power supply combination that is separate from the device that runs on power from the battery.

"Battery energy" means the energy, in watthours, delivered by the battery under the specified discharge conditions as determined using the applicable test method in Section 1604(w).

"Battery maintenance mode (maintenance mode)" means the mode of operation when the battery charger system is connected to the main electricity supply and the battery is fully charged, but is still connected to the charger.

"Charge return factor" means the number of ampere hours (Ah) returned to the battery during the charge cycle divided by the number of Ah delivered by the battery during discharge.

"Energy ratio" or "nonactive energy ratio" means the ratio of the accumulated nonactive energy divided by the battery energy.

"Inductive charger system" means a small battery charger system that transfers power to the charger through magnetic or electric induction.

"Large battery charger system" means a battery charger system (other than a battery charger system for golf carts) with a rated input power of more than 2 kW.

"Multi-port charger" means a battery charger that is capable of simultaneously charging two or more batteries. These chargers also may have multi-voltage capability, allowing two or more batteries of different voltages to charge simultaneously.

"No battery mode" means the mode of operation when the battery charger is connected to the main electricity supply and the battery is not connected to the charger.

"Power conversion efficiency" means the instantaneous DC output power of the charger system divided by the simultaneous utility AC input power.
"Small battery charger system" means a battery charger system with a rated input power of 2 kW or less, and includes golf cart battery charger systems regardless of the input power.

"USB charger system" means a small battery charger system that uses a Universal Serial Bus (USB) connector as the only power source to charge the battery, and is packaged with an external power supply rated with a voltage output of 5 volts and a power output of 15 watts or less.

The following standards are incorporated by reference in Section 1602.

Number	Title

FEDERAL TEST METHODS

CFR, Title 10, Part 430, Subpart B (2008)
CFR, Title 10, Part 431, Subparts B through W (2008)

Copies available from: Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
www.gpoaccess.gov/cfr/

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C78.1-1991 (R1996)	Dimensional and Electrical Characteristics of Fluorescent Lamps, Rapid Start Types
ANSI C78.3-1991 (R1996)	Dimensional and Electrical Characteristics of Fluorescent Lamps, Instant Start and cold Cathode Types
ANSI C78.21-1989	Incandescent Lamps – PAR and R Shapes
ANSI C78.81-2003	American National Standard for Electric Lamp Bases
ANSI C79.1-1994	Nomenclature for Glass Bulbs – Intended for Use with Electric Lamps
ANSI-IEC C81.61-2003	American National Standard for Electric Lamp Bases

ANSI C81.61-2006	Specifications for Electric Bases
ANSI C82.2-1984	Fluorescent Lamp Ballasts, Methods of Measurement
ANSI C82.6-2005	Standard for Ballasts for High-Intensity Discharge Lamps -Methods of Measurement

Copies available from: American National Standards Institute
1819 L Street, NW, 6th Floor
Washington, DC 20036
www.ansi.org
Phone: (202) 293-8020
FAX: (202) 293-9287

ASSOCIATION OF HOME APPLIANCES MANUFACTURERS (AHAM)

ANSI/AHAM DW-1-1992	Household Electric Dishwashers
ANSI/AHAM HRF-1-1979	Household Refrigerators, Combination Refrigerator-Freezers, and Household Freezers

Copies available from: Association of Home Appliance Manufacturers
1111 19th Street, NW, Suite 402
Washington, DC 20036
www.aham.org
Phone: (202) 872-5955
FAX: (202) 872-9354

ILLUMINATING ENGINGEERING SOCIETY OF NORTH AMERICA (IESNA)

IESNA LM-16-1993	IES Practical Guide to Colorimetry of Light Sources
IESNA LM-79-08	Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Copies available from: Illuminating Engineering Society of North America
120 Wall Street, 17th Floor
New York, NY 10005-4001
www.iesna.org
Phone: (212) 248-5000
FAX: (212) 248-5017/18

INTERNATIONAL COMMISSION ON ILLUMINATION (CIE)

CIE Publication 13.3 1995	Method of Measuring and Specifying Colour Rendering Properties of Light Sources

Copies available from:	International Commission on Illumination CIE Central Bureau Kegelgasse 27 A-1030 Vienna AUSTRIA Phone: +43 1 714 31 87 0 FAX: +43 1 714 31 87 18 e-mail: ciecb@cie.co.at

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

IEC 60034-1 (1996)	Rotating Electrical Machines
IEC 60034-12 (1980)	Rotating Electrical Machines, Part 12: Starting Performance of Single-Speed Three-Phase Cage Induction Motors for Voltages Up to and Including 660 V
IEC 60050-411 (1996)	International Electrotechnical Vocabulary Chapter 411: Rotating Machines
IEC 60072-1 (1991)	Dimensions and Output Series for Rotating Electrical Machines-Part 1: Frame Numbers 56 to 400 and Flange Numbers 55 to 1080
Copies available from:	International Electrotechnical Commission 3, rue de Varembé P.O. Box 131 CH – 1211 Geneva 20 Switzerland http://www.iec.ch Phone: +41 22 919 02 11 FAX: +41 22 919 03 00

NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG1-1987	Motors and Generators
NEMA MG1-1993	Motors and Generators
NEMA Premium™: Product Scope and Nominal Efficiency Levels (2001)	Motors
Copies available from:	National Electric Manufacturers Association 1300 N. 17th Street, Suite 1847 Rosslyn, VA 22209 www.nema.org Phone: (703) 841-3200 FAX: (703) 841-3300

NSF INTERNATIONAL

NSF/ANSI 51	Food Equipment Materials
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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), 25402.5.4, and 25960, Public Resources Code.

Section 1602.1. Rules of Construction.

(a) Where the context requires, the singular includes the plural and the plural includes the singular.

(b) The use of "and" in a conjunctive provision means that all elements in the provision must be complied with, or must exist in order to make the provision applicable. "Or" (rather than "and/or") is used where compliance with one or more elements suffices, or where the existence of one or more elements makes the provision applicable.

(c) "Shall" is mandatory and "may" is permissive.

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 1603. Testing: All Appliances.

(a) Testing Requirements.

The manufacturer shall cause the testing of units of each basic model of appliance within the scope of Section 1601, using the applicable test method listed in Section 1604 unless otherwise provided in subsection (c) of this section. If the manufacturer of the basic model does not participate in an approved industry certification program for the basic model, or does not apply such a program to test all units under this Article, the testing shall be at a laboratory that the Executive Director determines, under Section 1608(i), that:

(1) has conducted tests using the applicable test method within the previous 12 months;

(2) agrees to and does interpret and apply the applicable test method set forth in Section 1604 precisely as written;

(3) has, and keeps properly calibrated and maintained, all equipment, material, and facilities necessary to apply the applicable test method precisely as written;

(4) agrees to and does maintain copies of all test reports, and provides any such report to the Executive Director on request, for all basic models that are still in commercial production; and

(5) agrees to and does allow the Executive Director to witness any test of such an appliance on request, up to once per calendar year for each basic model.

EXCEPTION 1. to Section 1603(a): Section 1603(a) does not apply to any water heater

1. that is within the scope of 42 U.S.C. Sections 6292(a)(4) or 6311(1)(F),
2. that has a rated storage volume of less than 20 gallons, and
3. for which there is no federal test method applicable to that type of water heater.

EXCEPTION 2. to Section 1603(a): Section 1603(a) does not apply to cooking products that are federally-regulated consumer products.

(b) Approved Industry Certification Programs.

(1) The Executive Director shall, within 30 days of receiving a written request by an entity administering an appliance certification program, determine whether the program meets the criteria in Section 1602(a). If the Executive Director determines that the program meets all the criteria, he or she shall designate the program as an approved industry certification program. The Executive Director shall periodically publish a list of all approved industry certification programs.

(2) The Executive Director shall, within 30 days of receiving a written request, determine whether an approved industry certification program continues to meet the criteria in Section 1602(a). If the Executive Director determines that the program meets all the criteria, the program shall remain on the list of approved industry certification programs published under subparagraph (1). If the Executive Director determines that the program does not meet all the criteria, he or she shall remove the program from the list, and the program shall no longer be an approved industry certification program.

(c) Appliances for Which There Is a Waiver of the Federal Test Method.

(1) If, for a basic model of an appliance, there is in effect a waiver from an otherwise-applicable federal test method granted pursuant to 10 CFR Section 430.27 (2008), and the waiver is conditioned on adherence to an alternate test procedure pursuant to 10 CFR Section 430.27(l) (2008), then the manufacturer shall cause the testing of units of the basic model using such alternate test procedure, and such alternate test procedure shall be deemed to be the test method listed or specified in Section 1604 for the basic model.

(2) If, for a basic model of an appliance, there is in effect a waiver from an otherwise-applicable federal test method granted pursuant to 10 CFR Section 430.27 (2008), and the waiver is not conditioned on adherence to an alternate test procedure pursuant to 10 CFR Section 430.27(l) (2008), then the manufacturer shall petition the Executive Director to specify:

(A) an alternative assessment method; if the Executive Director so specifies, then the manufacturer shall cause the testing of units of the basic model of appliance using the alternative assessment method, and such alternative assessment method shall be deemed to be the test method listed or specified in Section 1604 for the basic model; or

(B) that there is no alternative assessment method, because either the basic model has physical characteristics that prevent testing or there is no method that can produce reasonably accurate results; if the Executive Director so specifies, then the manufacturer need not test units of the basic model and it shall be deemed that there is no test method listed or specified in Section 1604 for the basic model.

The manufacturer of the basic model shall obtain a specification from the Executive Director before submitting a statement for the basic model pursuant to Section 1606(a).

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 1604. Test Methods for Specific Appliances.

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

(1) The test methods for non-commercial refrigerators, non-commercial refrigerator-freezers, and non-commercial freezers, are shown in Table A-1.

Table A-1
Non-Commercial Refrigerator, Refrigerator-Freezer, and Freezer Test Methods

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 CFR Sections 430.23(a) (Appendix A1 to Subpart B of Part 430) (2008) and 430.23(b) (Appendix B1 to Subpart B of Part 430) (2008), as applicable
Wine chillers that are consumer products	10 CFR Section 430.23(a) (Appendix A1 to Subpart B of Part 430) (2008) 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 A1 shall be made using the modified formula: ET=(EP x 1440 x k)/T Where k = 0.85

(2) The test methods for commercial refrigerators, commercial refrigerator-freezers, and commercial freezers are shown in Table A-2.

Table A-2
Commercial Refrigerator, Refrigerator-Freezer, and Freezer Test Methods

Appliance	*Test Method*
Automatic commercial ice-makers	ARI 810-2003 Harvest rate (lbs. of ice/24 hours) shall be reported within 5% of the tested value.
Refrigerated bottled or canned beverage vending machines	ANSI/ASHRAE 32.1-2004 Volume of multi-package units shall be measured using ANSI/AHAM HRF-1-(2004)
Refrigerated buffet and preparation tables	ANSI/ASTM F2143-01
Other commercial refrigerators, refrigerator-freezers, and freezers, with doors	Volume shall be measured using ANSI/AHAM HRF-1-2004. Energy consumption shall be measured using 10 CFR Section 431.64 (2008).
Other commercial refrigerators, refrigerator-freezers, and freezers, without doors	Volume measured using ANSI/AHAM HRF-1-2004. Energy consumption measured using 10 CFR Section 431.64 (2008).

(3) When a refrigerator, refrigerator-freezer, or freezer can be operated using either alternating current electricity or one or more other sources of primary power, the test shall be performed using alternating current electricity only.

(4) The test method for water dispensers is EPA Energy Star Program Requirements for Bottled Water Coolers (2004).

EXCEPTION for units equipped with an integral, automatic timer**.** Units equipped with an integral, automatic timer shall not be tested using Section 4D, "Timer Usage," of the referenced test method.

(5) For the purpose of test procedures for walk-in coolers and walk-in freezers:

(A) The R-value shall be the 1/K factor multiplied by the thickness of the panel.

(B) The K factor shall be based on ASTM test procedure C518-2004.

(C) For calculating the R-value for freezers, the K factor of the foam at 20°F (average foam temperature) shall be used.

(D) For calculating the R-value for coolers, the K factor of the foam at 55°F (average foam temperature) shall be used.

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

The test methods for room air conditioners, room air-conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps are shown in Table B-1.

Table B-1
Room Air Conditioner, Room Air-Conditioning Heat Pump, Packaged Terminal Air Conditioner, and Packaged Terminal Heat Pump Test Methods

Appliance	*Test Method*
Room air conditioners and room air-conditioning heat pumps	10 CFR Section 430.23(f) (Appendix F to Subpart B of Part 430) (2008) (Cooling) ASHRAE 58-74 (Heating)
Packaged terminal air conditioners and packaged terminal heat pumps	ANSI/ARI 310/380-2004

(c) Central Air Conditioners.

(1) The test methods for central air conditioners are shown in Table C-1.

(2) Air-cooled central air conditioners with rated cooling capacity less than 65,000 Btu per hour that are designed for use either at 230 volts or at another voltage may be tested at 230 volts and the results applied to the other voltages. Central air conditioners that are designed for use either at 208 volts or at another voltage may be tested at 208 volts and the results applied to the other voltages.

(3) Split system central air conditioners and compressor-containing units shall be tested with the non-compressor-containing unit most likely to represent the highest national sales volume for the combined equipment.

Table C-1
Central Air Conditioner Test Methods

Appliance	*Test Method*
Computer Room Air Conditioners	ANSI/ASHRAE 127-2001
Other electric-powered unitary air-conditioners and electric-powered heat pumps	
air-cooled air conditioners and air-source heat pumps	
< 65,000 Btu/hr	ANSI/ARI 210/240-2003
≥ 65,000 and < 135,000 Btu/hr	ANSI/ARI 340/360-2004
≥ 135,000 Btu/hr	ANSI/ARI 340/360-2004
evaporatively-cooled air conditioners	
< 65,000 Btu/hr	ANSI/ARI 210/240-2003
≥ 65,000 Btu/hr	ANSI/ARI 340/360-2004
water-source single package and split system heat pumps	ISO 13256-1-1998
water-cooled single-package and split system air conditioners	
< 65,000 Btu/hr	ANSI/ARI 210/240-2003
≥ 65,000 and < 135,000 Btu/hr	ANSI/ARI 340/360-2004
≥ 135,000 Btu/hr	ANSI/ARI 340/360-2004
ground water-source heat pumps	ARI/ISO-13256-1:1998
ground-source closed-loop heat pumps	ARI/ISO-13256-1:1998
Gas-fired air conditioners and gas-fired heat pumps	ANSI Z21.40.4-1996 as modified by CEC, Efficiency Calculation Method for Gas-Fired Heat Pumps as a New Compliance Option (1996)

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

The test methods for spot air conditioners, evaporative coolers, ceiling fans, ceiling fan light kits, whole house fans, residential exhaust fans, and dehumidifiers are shown in Table D-1.

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

Appliance	*Test Method*
Spot Air Conditioners	ANSI/ASHRAE 128-2001
Ceiling Fans, Except Low-Profile Ceiling Fans	10 CFR Section 430.23(w) (Appendix U to Subpart B of Part 430) (2008)
Ceiling Fan Light Kits	10 CFR Section 430.23(x) (Appendix V to Subpart B of Part 430) (2008)
Evaporative Coolers	ANSI/ASHRAE 133-2001 for packaged direct evaporative coolers and packaged indirect/direct evaporative coolers; ANSI/ASHRAE 143-2000 for packaged indirect evaporative coolers; with the following modifications for both test methods: (A) Saturation effectiveness and total power of direct evaporative coolers and cooling effectiveness and total power of indirect evaporative coolers shall be measured at an airflow rate that corresponds to 0.3" external static pressure; (B) indoor dry bulb temperature shall be 80°F; (C) outdoor dry bulb temperature shall be 91°F; (D) outdoor wet bulb temperature shall be 69°F; and (E) Evaporative Cooler Efficiency Ratio (ECER) shall be calculated using the following formula: $ECER = 1.08 * (t_{in} - (t_{db} - \varepsilon * (t_{db} - t_{wb}))) * Q / W$ Where: t_{in} = indoor dry bulb temperature from (B) t_{db} = outdoor dry bulb temperature from (C) t_{wb} = outdoor wet bulb temperature from (D) ε = measured saturation effectiveness divided by 100 or measured cooling effectiveness from (A) Q = measured air flow rate (cfm) from (A) W = measured total power (watts) from (A)
Whole House Fans	HVI-916, tested with manufacturer-provided louvers in place (2005)
Dehumidifiers	10 CFR Section 430.23(z) (Appendix X to Subpart B of Part 430) (2008)
Residential Exhaust Fans	HVI-916 (2005)

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

(1) The test methods for gas space heaters and oil space heaters are shown in Table E-1.

(2) Gas space heaters intended for use either with natural gas or LPG may be tested with natural gas and the results applied to both fuel types.

(3) **Combination Space-Heating and Water-Heating Appliances.** The test method for combination space-heating and water-heating appliances is ANSI/ASHRAE 124-2007.

Table E-1
Gas and Oil Space Heater Test Methods

Appliance	*Test Method*
Central furnaces	
< 225,000 Btu/hr, single phase	10 CFR Section 430.23(n) (Appendix N to Subpart B of Part 430) (2008)
< 225,000 Btu/hr, three phase	10 CFR Section 430.23(n) (Appendix N to Subpart B of Part 430) (2008) or ANSI Z21.47-2001 (at manufacturer's option)
≥ 225,000 Btu/hr	
gas-fired	ANSI Z21.47-1998
oil-fired	UL 727-1994
Gas infrared heaters	
patio heaters	ASTM F2644-07
gas-fired high-intensity infrared heaters	ANSI Z83.19-2001
gas-fired low-intensity infrared heaters	ANSI Z83.20-2001
Unit heaters	
gas-fired	ANSI Z83.8-2002*
oil-fired	UL 731-1995*
Gas duct furnaces	ANSI Z83.8-2002
Boilers	
< 300,000 Btu/hr	10 CFR Section 430.23(n) (Appendix N to Subpart B of Part 430) (2008)
≥ 300,000 Btu/hr	HI-G BTS-2000
Wall furnaces, floor furnaces, and room heaters	10 CFR Section 430.23(o) (Appendix O to Subpart B of Part 430) (2008)

*To calculate maximum energy consumption during standby, measure the gas energy used in one hour (in Btus) and the electrical energy used (in watt-hours) over a one-hour period, when the main burner is off. Divide Btus and watt-hours by one hour to obtain Btus per hour and watts. Divide Btus per hour by 3.412 to obtain watts. Add watts of gas energy to watts of electrical energy to obtain standby energy consumption in watts.

(f) Water Heaters.

(1) **Small Water Heaters.** The test methods 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 CFR Section 430.23(e) (Appendix E to Subpart B of Part 430) (2008)
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 CFR Section 430.23(e) (Appendix E to Subpart B of Part 430) (2008)

(2) **Large water heaters.** The test methods for large water heaters are shown in Table F-2:

Table F-2
Large Water Heater Test Methods

Appliance	*Energy Efficiency Descriptor*	*Use Test setup equipment and procedures in subsection labeled "Method of Test" of*	*With these additional stipulations*
Gas-fired Storage and Instantaneous Water Heaters and Hot Water Supply Boilers*	Thermal Efficiency	ANSI Z21.10.3–1998, §2.9**	A. For all products, the duration of the standby loss test shall be until whichever of the following occurs first after you begin to measure the fuel and/or electric consumption: (1) The first cutout after 24 hours or (2) 48 hours, if the water heater is not in the heating mode at that time. B. For oil and gas products, the standby loss in Btu per hour must be calculated as follows: SL (Btu per hour) = S (% per hour) × 8.25 (Btu/gal–F) × Measured Volume (gal) × 70(°F). C. For oil-fired products, apply the following in conducting the thermal efficiency and standby loss tests: (1) Venting Requirements—Connect a vertical length of flue pipe to the flue gas outlet of sufficient height so as to meet the minimum draft specified by the manufacturer. (2) Oil Supply—Adjust the burner rate so that: (a) The hourly Btu input rate lies within ±2 percent of the manufacturer's specified input rate, (b) the CO_2 reading shows the value specified by the manufacturer, (c) smoke in the flue does not exceed No. 1 smoke as measured by the procedure in ASTM–D–2156–80, and (d) fuel pump pressure lies within ±10 percent of manufacturer's specifications. D. For electric products, apply the following in conducting the standby loss test: (1) Assume that the thermal efficiency (Et) of electric water heaters with immersed heating elements is 98 percent. (2) Maintain the electrical supply voltage to within ±5 percent of the center of the voltage range specified on the water heater nameplate. (3) If the set up includes multiple adjustable thermostats, set the highest one first to yield a maximum water temperature in the specified range as measured by the topmost tank thermocouple. Then set the lower thermostat(s) to yield a maximum mean tank temperature within the specified range.
	Standby Loss	ANSI Z21.10.3–1998, §2.10**	
Oil-fired Storage and Instantaneous Water Heaters and Hot Water Supply Boilers*	Thermal Efficiency	ANSI Z21.10.3–1998, §2.9**	
	Standby Loss	ANSI Z21.10.3–1998, §2.10**	
Electric Storage and Instantaneous Water Heaters	Standby Loss	ANSI Z21.10.3–1998, §2.10**	

*As to hot water supply boilers with a capacity of less than 10 gallons, these test methods became mandatory on October 21, 2005.
**Incorporated by reference, *see* 10 CFR 431.105 (2008).

(3) **Dual-Fuel Models.** Water heaters intended for use either with natural gas or LPG may be tested with natural gas and the results applied to both fuel types.

(4) **Hot Water Dispensers.** The test method for hot water dispensers is as follows:

(A) Connect the hot water dispenser to a water supply, a power supply and a means of measuring energy use. Fill the hot water dispenser with water and apply the power supply. Control the ambient temperature in the laboratory at 77°F ± 7°F throughout the test.

(B) Let the unit operate in standby mode for at least 2 complete cycles of thermostat operation, with the thermostat set to 150°F ± 10°F as described below.

(C) If the thermostat is adjustable, set it to produce water at 150°F ± 10°F, determined by discharging 5 oz. of water into an insulated cup immediately after a thermostat cut out, then measuring its temperature.

(D) If the thermostat is adjustable, and the temperature is not within the tolerance shown in Step B, readjust the thermostat and allow it to operate in standby mode for 2 cycles, measuring the discharge temperature immediately after the second cut out, as described above.

(E) After the thermostat has been properly adjusted, allow the unit to operate in standby mode for a minimum of 2 cycles, then measure the electricity used (in Wh) during the next 24 hours (plus time for first cut out after 24 hours). Begin measuring electricity usage immediately after a thermostat cut out, and end just after the first thermostat cut out after 24 hours. The total length of the test will be somewhat longer than 24 hours, depending on the first cut out after 24 hours. Divide the measured electricity used (in Wh) by the time (in hours), to obtain the standby loss (in watts).

(F) Record the water temperature measured in Step D and the standby loss calculated in Step E.

(5) **Mini-Tank Electric Water Heaters.** The test method for mini-tank electric water heaters is as follows:

(A) Storage Tank Volume

Determine the storage capacity of the water heater, in gallons, by subtracting the weight of the empty water heater from the weight of the water heater when completely filled with water (with all air eliminated and line pressure applied) and dividing the resulting net weight by the density of water at the measured temperature.

$$V = \frac{Wf - Wt}{\rho}$$

Where:

V = the storage capacity in gallons

Wf = the weight of the water heater when full (lb)

Wt = the weight of the empty water heater (lb)

ρ = the density of the water (lb/gal)

(B) Test Set-Up

1. Insulate the water piping, including heat traps, if provided by the manufacturer, for a length of 4 feet from the connection to the appliance with material having a thermal resistance I value of not less than 4°F x ft^2 x hr/Btu. Ensure that the insulation does not contact any water heater surface except at the location where the pipe connections penetrate the appliance jacket.
2. If the manufacturer has not provided a temperature and pressure relief valve, one shall be installed and insulated.
3. Maintain the temperature of the supply water at 70°F ± 2°F and the pressure of the water supply between 40 psi and the maximum pressure specified by the manufacturer. The accuracy of the pressure measuring devices shall be within ± 1.0 pound per square inch. The water heater shall be isolated by use of a shut-off valve in the supply line with an expansion tank installed in the supply line downstream of the shutoff valve. There shall be no shut-off means between the expansion tank and the appliance inlet.
4. Before starting testing of the water heater, the setting of the thermostat shall first be obtained by supplying the water in the system at 70°F ± 2°F and then noting the maximum mean temperature of the water after the thermostat shuts off the electric supply to be 142°F ± 8°F.
5. For measuring the energy consumption, instrumentation shall be installed which measures within ± 2 percent. Voltage shall be within ± 10 percent of the rated voltage.
6. Three or more temperature sensing means shall be installed inside the storage tank on the vertical center of each of three or more non-overlapping sections of approximately equal volume from the top to the bottom of the tank. Each temperature sensing means is to be located as far as possible from any heat source or other irregularity, anodic protective device, or water tank or flue wall. The anodic protective device shall be removed in order to install the temperature sensing means and testing shall be carried out with the device removed. If the temperature sensing means cannot be installed as specified above, placement of the temperature sensing means shall be made at the discretion of the testing agency so that comparable water temperature measurements are obtained. A temperature sensing means, shielded against direct radiation and positioned at the vertical midpoint of a tank-type water heater at a perpendicular distance of approximately 24 inches from the surface of the jacket, shall be installed in the test room.
7. The ambient air temperature of the test room shall be maintained at 75°F ± 10°F. The ambient temperature shall not vary more than ± 7.0°F from the average during the test, temperature readings being taken at 15 minute intervals and averaged at the end of the test.

(C) First Hour Rating, F_{hr}, gallons/hr

Heat the water to mean water temperature of 142°F ± 8°F. Draw hot water at 0.6 gpm ± 0.1 gpm until the mean water temperature drops 25° F, while recording the water temperature every 5 seconds. Maintain the supply water temperature at 70°F ± 2°F. Measure the volume of water drawn, (F_{hr}), which is the first hour rating F_{hr}.

(D) Standby Loss

Fill the water heater with water. Turn on the electric power to the water heater. After the first cut out, allow the water heater to remain in the standby mode until the next cut out. At this time, record the time, ambient temperature and begin measuring the electric consumption. Record the maximum mean tank temperature that occurs after cut out.

Record the mean tank temperature and the ambient air temperature at the end of the first 15 minute interval and at the end of each subsequent 15 minute interval. The duration of this test shall be until the first cut out that occurs after 24 hours.

Immediately after the conclusion of the test, record the total electrical energy consumption, the final ambient air temperature, and the time duration of the standby loss test (t) in hours rounded to the nearest one hundredth of an hour and the maximum mean tank temperature that occurs after cut out. Calculate the average of the recorded values of the mean tank temperatures and of the ambient air temperatures taken at the end of each time interval, including the initial and final values. Determine the difference (ΔT_3) between these two averages by subtracting the latter from the former, and the differences (ΔT_4) between the final and initial mean tank temperatures by subtracting the latter from the former.

Standby Loss (% per hour).

Determine the percentage standby loss using the formula:

$$S = \left[\frac{E \times 3412}{(K)(V)(\Delta T_3)(t)} - \frac{(\Delta T_4)}{(\Delta T_3)(t)(E_r/100)} \right] \times 100$$

Where:

S = standby loss, percent per hour, expressed as a ratio of the heat loss per hour to the heat content of the stored water above room temperature

K = 8.25 Btu per gallon °F, the nominal specific heat of water

V = tank capacity expressed in gallons

3412 = conversion factor, 1 kWh = 3412 Btu

ΔT_3 = difference between the mean tank temperature and the average ambient air temperature, °F

ΔT_4 = difference between the final and initial mean tank temperature, °F

t = duration of test, hrs.

E = electrical energy consumption in kWh

E_r = recovery efficiency, assumed to be 98% for water heaters with immersed heating elements

(E) Calculations

Determine the Recovery Efficiency (E_r) using the following formula:

$$E_r = 1 - \frac{(S \times K \times V \times \Delta T_2)}{(P \times 3412 \text{ Btu/kWh})}$$

Where:

S = standby loss, hr^{-1}

ΔT_2 = 45°F, the nominal difference between the mean tank temperature and the ambient air temperature during recovery

P = Rated input, kW

K = 8.25 Btu per gallon °F, the nominal specific heat of water

V = tank capacity expressed in gallons

3412 = conversion factor from kWh to Btu/hr

Determine the Standby Loss (W) using the formula:

$$W = S \times K \times V (\Delta T_1) / (3412 \text{ Btu/kWh})$$

Where:

ΔT_1 = 70°F, the nominal difference between mean tank temperature and the average ambient air temperature

S = standby loss, hr^{-1}

K = 8.25 Btu per gallon °F, the nominal specific heat of water

V = tank capacity expressed in gallons

3412 = conversion factor from kWh to Btu/hr

Determine the Daily Water Heating Energy Consumption, (C_{wh}) using the formula:

$$C_{wh} = \frac{K \times U \times \Delta T_5}{E_r}$$

Where:

U = 12 gallons, daily water use

ΔT_5 = 72°F, difference in outlet and inlet water temperatures

K = 8.25 Btu per gallon °F, the nominal specific heat of water

E_r = recovery efficiency, assumed to be 98%

Determine the Average Hourly Hot Water Storage Energy Consumption, (C_{us}) using the formula:

$$C_{us} = S \times K \times V \times \Delta T_1$$

Where:

ΔT_1	=	70° F, the nominal difference between the mean tank temperature and the ambient air temperature during standby
S	=	standby loss, hr^{-1}
K	=	8.25 Btu per gallon °F, the nominal specific heat of water
V	=	tank capacity expressed in gallons

Determine the Average Daily Energy Consumption for Electric Water Heaters, (C_y) using the formula:

$$C_y = C_{wh} + C_{us} \times \frac{24 \text{ hrs}}{\text{day}} - \frac{C_{wh}}{P \times 3412 \text{ Btu/kWh}}$$

Where:

C_{wh}	=	$\frac{K \times U \times \Delta T_5}{E_r}$
C_{us}	=	$S \times K \times V \times \Delta T_1$
P	=	Rated input, kW
3412	=	conversion factor from kWh to Btu/hr

Determine the Daily Hot Water Energy Consumption, (C_c) using the formula:

$$C_c = K \times U \times \Delta T_5$$

Where:

K	=	8.25 Btu per gallon °F, the nominal specific heat of water
U	=	12 gallons, daily water use
ΔT_5	=	72°F, the nominal difference between the outlet and inlet water temperatures

Determine the Annual Energy Consumption, kBtu/year (E_{annual}) using the formula:

$$E_{annual} = \frac{C_y \text{ Btu/day} \times 365 \text{ days/yr}}{1000}$$

(F) Report the following values:

Measured Volume, V	=	gallons
First Hour Rating, F_{hr}	=	gallons/hr
Rated electrical input, P	=	kW
Size (overall dimensions)	=	inches (h x w x d)
Recovery Efficiency, E_r	=	%

Standby Loss, S = %/hr
Standby Loss = watts
Annual Energy Consumption, E_{annual} = kBtu

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

(1) Test Methods for Pool Heaters

The test methods for pool heaters are shown in Table G.

Table G - Pool Heater Test Methods

Appliance		***Test Method***	
Gas-fired and oil-fired pool heaters		ANSI Z21.56-1994	
Electric resistance pool heaters		ANSI/ASHRAE 146-1998	
Heat pump pool heaters		ANSI/ASHRAE 146-1998, as modified by Addendum Test Procedure published by Pool Heat Pump Manufacturers Association dated April, 1999, Rev 4: Feb. 28, 2000:	
Reading	***Standard Temperature Rating***	***Low-Temperature Rating***	***Spa Conditions Rating***
Air Temperature Dry-bulb Wet-bulb	 27.0°C (80.6°F) 21.7°C (71.0°F)	 10.0°C (50.0°F) 6.9°C (44.4°F)	 27.0°C (80.6°F) 21.7°C (71.0°F)
Relative Humidity	63%	63%	63%
Pool Water Temperature	26.7°C (80.0°F)	26.7°C (80.0°F)	40.0°C (104.0°F)

(2) Test Method for Portable Electric Spas

The test method for portable electric spas is as follows:

(A) Minimum continuous testing time shall be 72 hours.

(B) The spa shall be filled with water to the halfway point between the bottom of the skimmer basket opening and the top of the spa. If there is no skimmer basket, the spa shall be filled with water to six inches below the top of the spa.

(C) The water temperature shall be 102°F, ± 2°F for the duration of the test.

(D) The ambient air temperature shall be 60°F, ± 3°F for the duration of the test.

(E) The standard cover that comes with the unit shall be used during the test.

(F) The test shall start when the water temperature has been at 102°F, ± 2°F for at least four hours.

(G) Record the total energy use for the period of test, starting at the end of the first heating cycle after the stabilization period specified in Section 1604(g)(2)(F), and finishing at the end of the first heating cycle after 72 hours has elapsed.

(H) The unit shall remain covered and in the default operation mode during the test. Energy-conserving circulation functions, if present, must not be enabled if not appropriate for continuous, long-term use. Ancillary equipment including, but

not limited to lights, audio systems, and water treatment devices, shall remain connected to the mains but may be turned off during the test if their controls are user accessible.

(I) The measured standby power shall be normalized to a temperature difference of 37°F using the equation,

$$P_{norm} = P_{meas} \frac{\Delta T_{ideal}}{\Delta T_{meas}}$$

Where:

P_{meas} = measured standby power during test (E/t)
ΔT_{ideal} = 37°F
$\Delta T_{meas} = T_{water\ avg} - T_{air\ avg}$
$T_{water\ avg}$ = Average water temperature during test
$T_{air\ avg}$ = Average air temperature during test.

(J) Data reported shall include: spa identification (make, model, S/N, specifications); volume of the unit in gallons; supply voltage; minimum, maximum, and average water temperatures during test; minimum, maximum, and average ambient air temperatures during test; date of test; length of test (t, in hours); total energy use during the test (E, in Wh); and normalized standby power (P_{norm}, in watts).

(3) Test Method for Residential Pool Pumps

The test method for residential pool pumps is as follows:

(A) Reported motor efficiency shall be verifiable by test method IEEE 114-2001.

(B) ANSI/HI 1.6-2000 shall be used for the measurement of pump efficiency.

(C) Three curves shall be calculated:

Curve A: $H = 0.0167 \times F^2$
Curve B: $H = 0.050 \times F^2$
Curve C: $H = 0.0082 \times F^2$

Where:

H is the total system head in feet of water.

F is the flow rate in gallons per minute (gpm).

(D) For each curve (A, B, or C), the pump head shall be adjusted until the flow and head lie on the curve. The following shall be tested and reported (i) for each curve for single-speed pumps or (ii) for each curve at both highest and lowest speeds for two-, multi-, or variable-speed pumps:

1. Motor nominal speed (RPM)
2. Flow (gallons per minute)
3. Power (watts and volt amps)
4. Energy Factor (gallons per watt hour)

Where the Energy Factor (EF) is calculated as:

EF = Flow (gpm) * 60 / Power (watts)

(h) Plumbing Fittings.

(1) The test method for commercial pre-rinse spray valves is ANSI/ASTM F2324-03, provided that adjustable flow-rate units shall be tested at their maximum possible flow rate.

(2) The test method for other plumbing fittings is ANSI/ASME A112.18.1M-1996.

(3) Showerhead-tub spout diverter combinations shall have both the showerhead and tub spout diverter tested individually.

(i) Plumbing Fixtures.

The test method for plumbing fixtures is ANSI/ASME A112.19.6-1995.

(j) Fluorescent Lamp Ballasts.

The test method for fluorescent lamp ballasts is 10 CFR Section 430.23(q) (Appendix Q to Subpart B of Part 430) (2008).

(k) Lamps.

(1) The test method for federally-regulated general service fluorescent lamps and federally-regulated incandescent reflector lamps is 10 CFR Section 430.23(r) (Appendix R to Subpart B of Part 430) (2008).

(2) The test method for state-regulated general service incandescent lamps and state-regulated incandescent reflector lamps is 10 CFR Section 430.23(r) (Appendix R to Subpart B of Part 430) (2008).

(3) The test method for medium base compact fluorescent lamps is 10 CFR Section 430.23(y) (Appendix W to Subpart B of Part 430) (2008).

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) **Emergency Lighting.** The test method for illuminated exit signs is 10 CFR Section 431.204(b) (2008)

(2) **Self-Contained Lighting Controls.** There is no test method for self-contained lighting controls.

(m) Traffic Signal Modules and Traffic Signal Lamps.

(1) The test method for traffic signal modules for vehicle or pedestrian control is 10 CFR Section 431.224 (2008).

(2) There is no test method for traffic signal lamps.

(n) Luminaires and Torchieres.

(1) There is no test method for torchieres.

(2) The test method for metal halide luminaires is ANSI C82.6-2005. Ballasts may be tested separately, outside the luminaire. A sample of at least five ballasts shall be tested for each lamp wattage for which the luminaire and ballasts are rated. The average of these tests shall be used for certification and compliance purposes. Ballast efficiency for High Intensity Discharge (HID) luminaire means the efficiency of a lamp and ballast combination expressed as a percentage and calculated by Efficiency = P_{out}/P_{in}, as measured. P_{out} is the measured operating lamp wattage and P_{in} is the measured operating input wattage.

The lamp, and the capacitor when it is provided, is to constitute a nominal system in accordance with the ANSI C78.43-2004. P_{in} and P_{out} are to be measured after lamps have been stabilized according to Section 4.4 of ANSI C82.6-2005 using a wattmeter with accuracy specified in Section 4.5 of ANSI C82.6-2005 for ballasts with a frequency of 60 Hz and shall have a basic accuracy of ± 0.5 percent at the higher of (a.) three times the output operating frequency of the ballast, or (b.) 2 kHz for ballast with a frequency greater than 60 Hz.

(3) The test method for under-cabinet luminaires is 10 CFR 430.23(q) (2008).

(4) The test methods for LED luminaires using LED lamps and light engines are California Joint Appendix JA8 – 2008, "Testing of Light Emitting Diode Light Sources," or IES LM-79-08, "Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products," at manufacturer's option.

(o) Dishwashers.

The test method for dishwashers is 10 CFR Section 430.23(c) (Appendix C to Subpart B of Part 430) (2008).

(p) Clothes Washers.

The test methods for clothes washers are shown in Table P-1.

Table P-1
Clothes Washer Test Methods

Appliance	*Test Method*
Clothes washers that are consumer products	10 CFR Section 430.23(j) (Appendix J1 to Subpart B of Part 430) (2008)
Commercial clothes washers	10 CFR Section 430.23(j) (Appendix J1 to Subpart B of Part 430) (2008)

(q) Clothes Dryers.

The test method for clothes dryers is 10 CFR Section 430.23(d) (Appendix D to Subpart B of Part 430) (2008).

(r) Cooking Products and Food Service Equipment.

The test methods for cooking products that are consumer products, commercial hot food holding cabinets, commercial convection ovens and commercial range tops are shown in Table R.

Table R
Cooking Product and Food Service Equipment Test Methods

Appliance	*Test Method*
Cooking products that are consumer products	10 CFR Section 430.23(i) (Appendix I to Subpart B of Part 430) (2008)
Commercial hot food holding cabinets	ANSI/ASTM F2140-01 (Test for idle energy rate-dry test) and US EPA's Energy Star Guidelines, "Measuring Interior Volume" (Test for interior volume)
Commercial convection ovens	ANSI/ASTM F1496-99 (Test for energy input rate and idle energy consumption only)
Commercial range tops	ANSI/ASTM F1521-96 (Test for cooking energy efficiency only)

(s) Electric Motors.

The test method for electric motors is 10 CFR Sections 431.16 (2008), including but not limited to provisions on testing laboratories, recognition of accreditation bodies, and recognition of certification programs.

(t) Distribution Transformers.

The test method for distribution transformers is 10 CFR Section 431.193 (Appendix A of Subpart K) (2008).

(u) Power Supplies.

The test method for Class A federally regulated and state-regulated external power supplies is US EPA "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" dated August 11, 2004, except that the test voltage specified in Section 4(d) of the test method shall be only 115 volts, 60 Hz.

(v) Televisions, and Consumer Audio and Video Equipment.

(1) The test method for standby-passive mode for consumer audio and video equipment is International Electrotechnical Commission (IEC) 62087:2002(E) – "Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment."

(2) The test method for standby-passive mode for televisions is International Electrotechnical Commission (IEC) 62301:2005, Edition 1.0 "Household Electrical Appliances – Measurement of Standby Power."

(3) The on mode and power factor test method for televisions shall be International Electrotechnical Commission (IEC) 62087:2008(E), Edition 2.0 – "Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment." Televisions shall be tested using section 11.6.1: "On mode (average) testing with dynamic broadcast-content video signal."

(A) Power Factor.

The power factor of the television shall be measured during the on mode test and the reported value shall be the average of power factor measurements taken at one minute intervals simultaneous to IEC 62087:2008(E), Edition 2.0 section 11.6.1 on mode wattage measurements. The measurement of power factor must be accurate to a hundredth of a percent.

(B) Testing Protocols.

A television shall be tested as manufactured without any modifications to screen settings with the exception of televisions manufactured with a forced menu. Televisions manufactured with a forced menu shall be adjusted and tested under the following conditions, 1 or 2, as applicable to the unit being tested.

1. The on mode measurement of a television with a forced menu shall be tested in the "home" mode or the manufacturer's recommended mode for home use. In addition, the on mode of a television shall be measured in the most energy consumptive mode available in the forced menu.
2. If neither a "home" mode nor a manufacturer's recommended mode for home use are available, the television shall be tested in the most consumptive mode available in the forced menu to measure the on mode power.

(C) On Mode Power Consumption.

The on mode power consumption for televisions with and without forced menus, and incorporating automatic brightness controls, shall be calculated as follows:

$P_{a1_broadcast} = 0.55 * P_{o_broadcast} + 0.45 * P_{abc_broadcast}$

Where:

$P_{o_broadcast}$ = on mode power test with 300 lux entering the light sensor
$P_{abc_broadcast}$ = on mode power test with 0 lux entering the light sensor.

(D) Light Measurement Protocols.

All luminance testing shall be performed in dark room conditions. The display screen illuminance measurement (E) in TV standby-passive mode must be less than or equal to 1.0 lux. Measurements should be taken perpendicular to the center of the display screen using a Light Measuring Device (LMD).

Measurements shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognized state of the art measurement methods. Measurements shall also be made with the Automatic Brightness Control function, if such a function exists, disabled. If the Automatic Brightness Control function exists and cannot be disabled, then measurements shall be performed with light entering directly into the ambient light sensor at a level between 300 lux and 400 lux.

1. Ensure the television is set to the Home mode, or the default mode as shipped.
2. Immediately following the on mode power testing using the dynamic broadcast–content video signal as outlined in Section 1604(V)(3) display the three bar video signal provided in IEC 62087 Edition 2.0, Section 11.5.5, which displays three bars of white (100%) over a black (0%) background.
3. After the three bar video signal has been displayed for 10 minutes, measure the luminance (L_{home}). See *Note 1*.
4. Within 1 minute of measuring L_{home}, set the television to Retail mode, or the brightest selectable preset mode, and display the three bar video signal.
5. After the three bar video signal has been displayed for an additional 10 minutes, measure the luminance (L_{high}). See *Note 2*.
6. Calculate and report the luminance ratio by dividing L_{home} by L_{high}.: Luminance ratio = L_{home}/L_{high}

Note 1: For television sets that are known to stabilize within 10 minutes, this duration may be reduced if the resulting measurement can be shown to be within 2% of the result that would otherwise be achieved using the full 10 minute duration.

Note 2: When possible, measurements of luminance shall be made without changing the LMD's measurement position on the display when switching between the home mode and retail mode. If this is not possible, the tester should replicate the measurement position of the LMD so that measurements in the home-mode and retail-mode are in the same position on the display.

(w) Battery Charger Systems.

(1) **Test Method for Small Battery Charger Systems.** The test method for small battery charger systems is 10 CFR Section 430.23(aa) (Appendix Y to Subpart B of Part 430) (2011).

(A) Multi-port battery charger systems shall be tested for 24-hour efficiency and maintenance mode with a battery in each port.

(B) For single port small battery charger systems, the highest 24-hour charge and maintenance energy, maintenance mode, and no battery mode results of the test procedure shall be used for purposes of reporting and determining compliance with Section 1605.3(w)(2), Table W-2.

(C) For purposes of computing the small battery charger system standard, the number of ports included in a multi-port charger system shall be equal to the number ports that are separately controlled. For example a multi-port charger system that charges eight batteries by using two charge controllers that charge four batteries in parallel would use two for "N" as described in Section 1605.3(w)(2),Table W-2.

(D) Small battery charger systems that are not consumer products may use the battery manufacturer's recommended end of discharge voltage in place of values in 10 CFR Section 420.23(aa) (Appendix Y to Subpart B of Part 430) (2011), Table 5.2, where the table's values are not applicable.

(2) **Test Method for Large Battery Charger Systems.** The test method for large battery charger systems is *Energy Efficiency Battery Charger System Test Procedure* Version 2.2 dated November 12, 2008 and published by ECOS and EPRI Solutions with the following modifications:

(A) The test procedure shall be conducted for 100, 80, and 40 percent discharge rates for only one charge profile, battery capacity, and battery voltage. The manufacturer shall test one battery and one charge profile using the following criteria:

1. the charge profile with the largest charge return factor;
2. the smallest rated battery capacity; and
3. the lowest voltage battery available at that rated capacity.

(B) The battery manufacturer's recommended end of discharge voltage may be used in place of values in the test method Part 1, Section III.F, Table D where the table's values are not applicable.

The following documents are incorporated by reference in Section 1604.

CALIFORNIA ENERGY COMMISSION TEST METHODS

CEC/Gas-Fired Heat Pumps	Efficiency Calculation Method for Gas-Fired Heat Pumps as a Exceptional Method (1996) New Compliance Option (1996)
California Joint Appendix JA8 – 2008	Testing of Light Emitting Diode Light Sources
Copies available from:	California Energy Commission Energy Hotline 1516 Ninth Street, MS-25 Sacramento, California 95814 Phone: (916) 654-5106 FAX: (916) 654-4304

FEDERAL TEST METHODS

CFR, Title 10, Section 430.23 (2011)

CFR, Title 10, Section 431.64 (2008)

CFR, Title 10, Section 431.16 (2008)

CFR, Title 10, Section 431.105 (2008)

CFR, Title 10, Section 431.204 (2008)

CFR, Title 10, Section 431.224 (2008)

Copies available from: Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
www.gpoaccess.gov/cfr/

EPA Energy Star Program Requirements for Bottled Water Coolers (2004)

EPA "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" August 11, 2004)

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

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

ANSI/ARI 210/240-2003	Standard for Unitary Air-Conditioning and Air-Source Heat Pump Equipment
ANSI/ARI 310/380-2004	Standard for Packaged Terminal Air-Conditioners and Heat Pumps
ANSI/ARI 320-98	Standard for Water-Source Heat Pumps
ANSI/ARI 340/360-2004	Commercial and Industrial Unitary Air-Conditioning Equipment
ARI 810-2003	Automatic Commercial Ice-Makers
ARI/ISO 13256-1:1998	Standard for Water-Source Heat Pumps

Copies available from: Air-Conditioning, Heating and Refrigeration Institute
4301 North Fairfax Drive, Suite 425
Arlington, VA 22203
www.ahrinet.org
Phone: (703) 524-8800
FAX: (703) 528-3816

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C78.43-2005	American National Standards for Electric Lamps - Single-Ended Metal Halide Lamps
ANSI C82.6-2005	Ballasts for High Intensity Discharge Lamps – Method of Measurement
ANSI Z21.10.3-1998	Standard for Gas Water Heaters, Volume III, Storage Water Heaters with Input Ratings Above 75,000 Btu per hour, Circulating and Instantaneous
ANSI Z21.40.4-1996	Performance Testing and Rating of Gas-Fired Air-Conditioning and Heat Pump Appliances
ANSI Z21.47-2001	Standard for Gas-Fired Central Furnaces
ANSI Z21.56-1994	Standard for Gas-Fired Pool Heaters
ANSI Z83.8-2002	Standard for Gas Unit Heaters and Gas-Fired Duct Furnaces
ANSI Z83.19-2001	Standard for Gas-Fired High-Intensity Infrared Heaters
ANSI Z83.20-2001	Standard for Gas-Fired Low-Intensity Infrared Heaters
Copies available from:	American National Standards Institute 1819 L Street, NW, 6th Floor Washington DC 20036 www.ansi.org Phone: (202) 293-8020 FAX: (202) 293-9287

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C518-2004	Standard Test Method for Steady-State Thermal Transmission Properties
ANSI/ASTM F1496-99	Standard Test Method for Performance of Convection Ovens
ANSI/ASTM F1521-96	Standard Test Methods for Performance of Range Tops
ANSI/ASTM F2022-00	Standard Test Method for Performance of Booster Water Heaters
ANSI/ASTM F2140-01	Standard Test Method for the Performance of Hot Food Holding Cabinets
ANSI/ASTM F2143-01	Standard Test Method for the Performance of Refrigerated Buffet and Preparation Tables

ANSI/ASTM F2324-03	Standard Test Method for Pre-Rinse Spray Valves
ASTM F2644-07	Standard Test Method for Performance of Commercial Patio Heaters

Copies available from: ASTM
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
www.astm.org
Phone: (610) 832-9585
FAX: (610) 832-9555

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

ANSI/ASHRAE 32.1 2004	Methods of Testing for Rating Vending Machines for Bottled, Canned, and Other Sealed Beverages
ASHRAE 58-74	Method of Testing Room Air Conditioner Heating Capacity
ANSI/ASHRAE 118.2-1993	Method of Testing for Rating Residential Water Heaters
ANSI/ASHRAE 124-2007	Method of Testing for Rating Combination Space-Heating and Water-Heating Appliances
ANSI/ASHRAE 127-2001	Method of Testing for Rating Computer and Data Processing Room Unitary Air-Conditioners
ANSI/ASHRAE 128-2001	Method of Rating Spot Unitary Air Conditioners
ANSI/ASHRAE 133-2001	Method of Testing Direct Evaporative Air Coolers
ANSI/ASHRAE 143-2000	Method of Test for Rating Indirect Evaporative Coolers
ANSI/ASHRAE 146-1998	Method of Testing and Rating Pool Heaters

Copies available from: American Society of Heating, Refrigerating and Air-Conditioning Engineers
1791 Tullie Circle N.E.
Atlanta, GA 30329
www.ashrae.org
Phone: (800) 527-4723 (U.S./Canada) or (404) 636-8400
FAX: (404) 321-5478

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ANSI/ASME A112.18.1M-1996	Plumbing Fixture Fittings

ANSI/ASME A112.19.6-1995 Hydraulic Performance Requirements for Water Closets and Urinals

Copies available from: ASME International
Three Park Avenue
New York, NY 10016-5990
www.asme.org
Phone: (800) THE-ASME (U.S./Canada)
95-800-843-2763 (Mexico)
(973) 882-1167 (Outside North America)

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS (AHAM)

ANSI/AHAM HRF-1-1979 Household Refrigerators, Combination Refrigerator-Freezers, and Household Freezers

ANSI/AHAM HRF-1-2004 Energy Performance and Capacity of Household Refrigerators, Refrigerator-Freezers, and Household Freezers

Copies available from: Association of Home Appliance Manufacturers
1111 19th Street, NW, Suite 402
Washington, DC 20036
www.aham.org
Phone: (202) 872-5955
FAX: (202) 872-9354

ECOS CONSULTING

Energy Efficiency Battery Charger System Test Procedure Version 2.2 dated November 12, 2008

Copies available from: Ecos Consulting
801 Florida Road, # 11
Durango, CO 81301
http://www.efficientproducts.org/
Phone: (970) 259-6801
FAX: (970) 259-8585

HOME VENTILATING INSTITUTE (HVI)

HVI-916 (2005) Airflow Test Procedure

Copies available from: Home Ventilating Institute
1000 N. Rand Rd., Suite 214
Wauconda, IL 60084
www.hvi.org

Phone: (847) 526-2010
FAX: (847) 526-3993

HYDRAULIC INSTITUTE (HI)

ANSI/HI 1.6-2000	Centrifugal Pump Tests
Copies available from:	Hydraulic Institute 9 Sylvan Way Parsippany, NJ 07054 http://www.pumps.org/ www.hydraulicinstitute.com Phone: (973) 267-9700 FAX: (973) 267-9055

HYDRONICS INSTITUTE SECTION OF AHRI (HI-A)

BTS-2000	Method to Determine Efficiency of Commercial Space Heating Boilers
Copies available from:	Hydronics Institute Section of AHRI P.O. Box 218 Berkeley Heights, NJ 07922-0218 www.ahrinet.org Phone: (908) 464-8200 FAX: (908) 464-7818

ILLUMINATING ENGINGEERING SOCIETY OF NORTH AMERICA (IESNA)

IESNA LM-79-08	Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products
Copies available from:	Illuminating Engineering Society of North America 120 Wall Street, 17th Floor New York, NY 10005-4001 www.iesna.org Phone: (212) 248-5000 FAX: (212) 248-5017/18

INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

IEC 62087 (2002) (E)	Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment.
IEC 62087:2008(E), Edition 2.0	Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment
IEC 62301:2005	Household Electrical Appliances – Measurement of Standby Power

Copies available from: IEC Central Office
3, rue de Varembé
P.O. Box 131
CH – 1211 GENEVA 20
Switzerland
Phone: +41 22 919 02 11

INTERNATIONAL ORGANIZATION FOR STANDARDS (ISO)

ISO 13256-1-1998 — Water-source heat pumps-Testing and rating for performance-Part 1: Water-to-air and brine-to-air heat pumps

Copies available from: ISO Central Secretariat
International Organization for Standardization (ISO)
1, rue de Varembé, Case postale 56
CH-1211 Geneva 20, Switzerland
www.iso.org
Phone: +41 22 749 01 11
FAX: +41 22 733 34 30

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 114-2001 — Standard Test Procedures for Single-Phase Induction Motors

Copies available from: Institute of Electrical and Electronics Engineers
Publications Office
10662 Los Vaqueros Circle
PO Box 3014
Los Alamitos, CA 90720-1264
www.ieee.org
Phone: (714) 821-8380
Fax: (714) 821-4010

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA TP2-1998 — Standard Test Method for Measuring the Energy Consumption of Distribution Transformers

Copies available from: National Electrical Manufacturers Association
1300 N. 17th Street, Suite 1847
Rosslyn, VA 22209
www.nema.org
Phone: (703) 841-3200
FAX: (703) 841-3300

POOL HEAT PUMP MANUFACTURERS ASSOCIATION

Addendum Test Procedure – April 1999, Rev. 4: Feb. 28, 2000

Copies available from: Pool Heat Pump Manufacturers Association
Jeff Tawney, President
c/o Aquacal
2737 24th Street, North
St. Petersburg, FL 33713
Phone: (727) 823-5642 Ext. 130

UNDERWRITERS LABORATORIES, INC. (UL)

UL 727-1994	Standard for Safety for Oil-Fired Central Furnaces
UL 731-1995	Standard for Safety for Oil-Fired Unit Heaters
UL 924-1995 (rev. 1999)	Standard for Safety for Emergency Lighting and Power Equipment

Copies available from: Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062-2096
www.ul.com
Phone: (847) 272-8800
FAX: (847) 272-8129

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. Energy Performance, Energy Design, Water Performance, and Water Design Standards: In General.

(a) California Standards that are the same as Federal Standards.

Section 1605.1 contains standards that are the same as the federal standards contained in, or adopted in regulations pursuant to, NAECA or EPAct.

(1) The standards in Section 1605.1 are applicable as federal law to the sale of appliances in California and the rest of the United States. The standards apply to federally-regulated consumer products and federally-regulated commercial and industrial equipment. Under 42 U.S.C. Sections 6302(a)(5), 6316(a), and 6316(b)(1), which are enforced by the U.S. Department of Energy, no appliance listed in this Section may be sold in the United States unless the appliance complies with the applicable standard listed in this Section as determined using the applicable test method listed in Section 1604, and with all other requirements of federal law.

(2) Each standard in Section 1605.1 is also adopted in this Article as California state law applicable to the sale and offering for sale of appliances in California, if the corresponding federal standard is repealed or becomes inoperable, inapplicable, or otherwise invalid as federal law. Immediately upon the effect of such federal repeal or invalidity the standard becomes effective as California state law, and no appliance previously covered by the federal standard shall be sold or offered for sale in the state unless the appliance complies with the state standard as determined using the applicable test method listed in Section 1604, and with all other requirements of this Article. Provided, however, that if a waiver from federal preemption is required for a standard in Section 1605.1, the state standard takes effect as California state law only on the effective date of a U.S. Department of Energy waiver from federal preemption.

(b) California Standards for Federally-Regulated Appliances.

Section 1605.2 contains standards that are exclusively California standards. They are applicable as state law to the sale and offering for sale of appliances in California. Because the standards apply to federally-regulated appliances, they take effect as state law only on:

(1) the effective date of a U.S. Department of Energy waiver from federal preemption; or

(2) one year after removal of federal preemption by action such as a change in federal law, but no earlier than July 1, 2004.

When an applicable standard in Section 1605.2 takes effect as state law, no appliance may be sold or offered for sale in California unless the appliance complies with the standard as determined using the applicable test method in Section 1604 (and with all the other applicable requirements of this Article).

(c) California Standards Applicable to Sale and Installation.

Section 1605.3 contains standards that are exclusively California standards. They are applicable as state law to the sale or offering for sale of appliances in California. No appliance may be sold or offered for sale in California unless the appliance complies with the applicable standard in Section 1605.3 as determined using the applicable test method listed in Section 1604 (and with all the other requirements of this Article).

(d) Multiple Standards.

If more than one standard is shown for an appliance in Section 1605.1, 1605.2, or 1605.3, the appliance shall meet all the standards shown.

(e) Multiple Test Methods.

If more than one test method is shown as applicable to a standard in Section 1605.1, 1605.2, or 1605.3, the appliance shall comply with the standard when tested with each and every individual specified test method, except for those appliances where the appropriate provision in Section 1604 specifically allows a choice of test method at the manufacturer's option.

(f) Multiple Functions.

If an appliance can serve more than one function, such as either space-heating and service water-heating then:

(1) if the primary function is served by a federally-regulated appliance, the primary function appliance shall meet the applicable standard in Section 1605.1; and

(2) if the primary function is served by an appliance that is not a federally-regulated appliance, the primary function appliance shall meet the applicable standard in Section 1605.2 or Section 1605.3; and the secondary function appliances shall meet the applicable standards in Sections 1605.1, 1605.2, and 1605.3. Water heaters that are federally-regulated appliances, and that are contained in combination space-heating and water-heating appliances that are federally-regulated appliances, are required only to meet the standard for the applicable type of water heater, and are not required to meet any standard for space heaters.

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

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

(1) **Non-Commercial Refrigerators, Non-Commercial Refrigerator-Freezers, and Non-Commercial Freezers.** The energy consumption of 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, non-commercial refrigerator-freezers, and non-commercial freezers, including internal freezers, drawer units, and kitchen units that are manufactured on or after the effective dates shown shall be not greater than the applicable values shown in Table A-3.

Table A-3
Standards for Non-Commercial Refrigerators, Refrigerator-Freezers, and Freezers Manufactured on or After July 1, 2001

Appliance	*Maximum Energy Consumption (kWh/yr)*
Refrigerators and Refrigerator-Freezers with manual defrost	8.82AV + 248.4
Refrigerator-Freezer – partial automatic defrost	8.82AV + 248.4
Refrigerator-Freezers – automatic defrost with top-mounted freezer without through-the-door ice service and all refrigerators – automatic defrost	9.80AV + 276.0
Refrigerator-Freezers – automatic defrost with side-mounted freezer without through-the-door ice service	4.91 AV + 507.5
Refrigerator-Freezers – automatic defrost with bottom-mounted freezer	4.60AV + 459.0
Refrigerator-Freezers – automatic defrost with top-mounted freezer with through-the-door ice service	10.20AV + 356.0
Refrigerator-Freezers – automatic defrost with side-mounted freezer with through-the-door ice service	10.10AV + 406.0
Upright Freezers with manual defrost	7.55AV + 258.3
Upright Freezers with automatic defrost	12.43AV + 326.1
Chest Freezers and all other Freezers except Compact Freezers	9.88AV + 143.7
Compact Refrigerators and Refrigerator-Freezers with manual defrost	10.70AV + 299.0
Compact Refrigerator-Freezers – partial automatic defrost	7.00AV + 398.0
Compact Refrigerator-Freezers – automatic defrost withtop-mounted freezer and compact all refrigerators – automatic defrost	12.70AV + 355.0
Compact Refrigerator-Freezers – automatic defrost with side-mounted freezer	7.60AV + 501.0
Compact Refrigerator-Freezers – automatic defrost with bottom-mounted freezer	13.10AV + 367.0
Compact Upright Freezers with manual defrost	9.78AV + 250.8
Compact Upright Freezers with automatic defrost	11.40AV + 391.0
Compact Chest Freezers	10.45AV + 152.0
AV = adjusted total volume, expressed in ft^3, as determined in 10 CFR, Part 430, Appendices A1 and B1 of Subpart B (2008), which is: [1.44 x freezer volume (ft^3)] + refrigerator volume (ft^3) for refrigerators; [1.63 x freezer volume (ft^3)] + refrigerator volume (ft^3) for refrigerator-freezers; [1.73 x freezer volume (ft^3)] for freezers.	
Note: Maximum energy consumption standards for refrigerator-freezers with internal freezers are same as those for refrigerator-freezers with top-mounted freezers.	

(2) **Commercial Refrigerators, Commercial Refrigerator-Freezers, and Commercial Freezers.** The daily energy consumption (in kilowatt hours per day) of each commercial refrigerator, commercial refrigerator-freezer, and commercial freezer with a self-

contained condensing unit and manufactured on or after January 1, 2010, shall be not greater than the applicable values shown in Table A-4.

Table A-4
Standards for Commercial Refrigerators, Refrigerator-Freezers, and Freezers Manufactured on or After January 1, 2010

Appliance	*Maximum Daily Energy Consumption (kWh)*
Refrigerators with solid doors	0.10V + 2.04
Refrigerators with transparent doors	0.12V + 3.34
Freezers with solid doors	0.40V + 1.38
Freezers with transparent doors	0.75V + 4.10
Refrigerator/freezers with solid doors	the greater of 0.27AV–0.71 or 0.70
Refrigerators with self-condensing unit designed for pull-down temperature applications	0.126V + 3.51

(3) **Automatic Commercial Ice Makers.** Each 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, shall meet the standard levels set forth in Table A-5.

Table A-5
Standards for Automatic Commercial Ice Makers
Manufactured on or After January 1, 2010

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	< 500	7.80–0.0055H	200–0.022H.
Ice Making Head	Water	≥ 500 and < 1436	5.58–0.0011H	200–0.022H.
Ice Making Head	Water	≥ 1436	4.0	200–0.022H.
Ice Making Head	Air	< 450	10.26–0.0086H	Not applicable.
Ice Making Head	Air	≥ 450	6.89–0.0011H	Not applicable.
Remote Condensing (but not remote compressor)	Air	< 1000	8.85–0.0038H	Not applicable.
Remote Condensing (but not remote compressor)	Air	≥ 1000	5.1	Not applicable.
Remote Condensing and Remote Compressor	Air	< 934	8.85–0.0038H	Not applicable.
Remote Condensing and Remote Compressor	Air	≥ 934	5.3	Not applicable.
Self Contained	Water	< 200	11. 40–0.019H	191–0.0315H.
Self Contained	Water	≥ 200	7.6	191–0.0315H.
Self Contained	Air	< 175	18.0–0.0469H	Not applicable.
Self Contained	Air	≥ 175	9.8	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.** Walk-in coolers and walk-in freezers manufactured on or after January 1, 2009 shall:

(A) have automatic door closers that firmly close all walk-in doors that have been closed to within one inch of full closure, except that this subparagraph shall not apply to doors wider than three feet nine inches or taller than seven feet;

(B) have strip doors, spring hinged doors, or other method of minimizing infiltration when doors are open;

(C) contain wall, ceiling, and door insulation of at least R-25 for coolers and R-32 for freezers, except that this subparagraph shall not apply to glazed portions of doors nor to structural members;

(D) contain floor insulation of at least R-28 for freezers;

(E) for evaporator fan motors of under one horsepower and less than 460 volts, use:

1. electronically commutated motors (brushless direct current motors); or
2. 3-phase motors;

(F) for condenser fan motors of under one horsepower, use:

1. electronically commutated motors;
2. permanent split capacitor-type motors; or
3. 3-phase motors; and

(G) for all interior lights, use light sources with an efficacy of 40 lumens per watt (LPW) or more, including ballast losses (if any), except that light sources with an efficacy of 40 LPW or less, including ballast losses (if any), may be used in conjunction with a timer or device that turns off the lights within 15 minutes of when the walk-in cooler or walk-in freezer is not occupied by people.

(5) **Walk-In Coolers with Transparent Reach-in Doors and Walk-In Freezers with Transparent Reach-In Doors.** In addition to the design standards in Section 1605.1(a)(4), walk-in coolers equipped with transparent reach-in doors and walk-in freezers equipped with transparent reach-in doors and manufactured on or after January 1, 2009 shall also meet the following design standards:

(A) Transparent reach-in doors for walk-in freezers and windows in walk-in freezer doors shall be of triple-pane glass with either heat-reflective treated glass or gas fill;

(B) Transparent reach-in doors for walk-in coolers and windows in walk-in cooler doors shall be either:

1. double-pane glass with heat-reflective treated glass and gas fill; or
2. triple-pane glass with either heat-reflective treated glass or gas fill;

(C) if the appliance has an antisweat heater

1. without antisweat heat controls, the appliance shall have a total door rail, glass, and frame heater power draw of not more than 7.1 watts per square foot (W/ft^2) of door opening (for freezers) and 3.0 watts per square foot (W/ft^2) of door opening (for coolers);
2. with antisweat heat controls, and the total door rail, glass, and frame heater power draw is more than 7.1 watts per square foot (W/ft^2) of door opening (for freezers) and 3.0 watts per square foot (W/ft^2) of door opening (for coolers), the antisweat heat controls shall reduce the energy use of the antisweat heater in a quantity corresponding to the relative humidity in the air outside the door or to the condensation on the inner glass pane.

(6) See Section 1605.3(a) for energy efficiency and energy design standards for freezers with volume exceeding 30 ft^3 that are consumer products, wine chillers that are consumer products, commercial refrigerators including but not limited to refrigerated bottled or canned beverage vending machines, commercial refrigerator-freezers, commercial freezers, commercial ice-makers, and water dispensers. Standards in Section 1605.3(a) for commercial refrigerators (not including refrigerated bottled or canned beverage vending machines), commercial refrigerator-freezers, and commercial freezers remain in effect for all models manufactured prior to January 1, 2010.

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

(1) **Room Air Conditioners and Room Air-Conditioning Heat Pumps.** The EER of room air conditioners and room air-conditioning heat pumps that are manufactured on or after October 1, 2000 shall be not less than the applicable values shown in Table B-2. The EER of room air conditioners and room air-conditioning heat pumps that are labeled for use at more than one voltage shall be not less than the applicable values shown in Table B-2 at each of the labeled voltages.

Table B-2
Standards for Room Air Conditioners and Room Air-Conditioning Heat Pumps

Appliance	*Louvered Sides*	*Cooling Capacity (Btu/hr)*	*Minimum EER*
Room Air Conditioner	Yes	< 6,000	9.7
Room Air Conditioner	Yes	≥ 6,000 – 7,999	9.7
Room Air Conditioner	Yes	≥ 8,000 – 13,999	9.8
Room Air Conditioner	Yes	≥ 14,000 – 19,999	9.7
Room Air Conditioner	Yes	≥ 20,000	8.5
Room Air Conditioner	No	< 6,000	9.0
Room Air Conditioner	No	≥ 6,000 – 7,999	9.0
Room Air Conditioner	No	≥ 8,000 – 19,999	8.5
Room Air Conditioner	No	≥ 20,000	8.5
Room Air Conditioning Heat Pump	Yes	< 20,000	9.0
Room Air Conditioning Heat Pump	Yes	≥ 20,000	8.5
Room Air Conditioning Heat Pump	No	< 14,000	8.5
Room Air Conditioning Heat Pump	No	≥ 14,000	8.0
Casement-Only Room Air Conditioner	Either	Any	8.7
Casement-Slider Room Air Conditioner	Either	Any	9.5

(2) **Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps.** The EER and COP, as applicable, of packaged terminal air conditioners and packaged terminal heat pumps shall be not less than the applicable values shown in Table B-3.

Table B-3
Standards for Packaged Terminal Air Conditioners and Packaged Terminal Heat Pumps

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	Any	1.3 + [0.16 (10.0 – 0.00016 x Cap.)] COP
Cap. = cooling capacity (Btu/hr)			

(c) Central Air Conditioners.

(1) **Central Air Conditioners Other than Water-Source Heat Pumps Below 240,000 Btu/hr.** The EER, SEER, COP, and HSPF, as applicable, of all central air conditioners shall be not less than the applicable values shown in Tables C-2, C-3, C-4, C-5, and C-6.

EXCEPTION to Section 1605.1(c)(1): The standards shown in Tables C-2, C-3, C-4, and C-5 do not apply to single-package vertical air conditioners and single-package vertical heat pumps manufactured on or after January 1, 2010.

Table C-2
Standards for Single Phase Air-Cooled Air Conditioners with Cooling Capacity Less than 65,000 Btu per Hour and Single Phase Air-Source Heat Pumps with Cooling Capacity Less than 65,000 Btu per Hour, Not Subject to EPAct

Appliance	*Minimum Efficiency*			
	Effective January 1, 1995		*Effective January 23, 2006*	
	Minimum SEER	*Minimum HSPF*	*Minimum SEER*	*Minimum HSPF*
Split system air conditioners	10.0	—	13.0	—
Split system heat pumps	10.0	6.8	13.0	7.7
Single package air conditioners	9.7	—	13.0	—
Single package heat pumps	9.7	6.6	13.0	7.7
Space constrained air conditioners – split system	10.0	—	12.0	
Space constrained heat pumps – split system	10.0	6.8	12.0	7.4
Space constrained air conditioners – single package	9.7	—	12.0	
Space constrained heat pumps – single package	9.7	6.6	12.0	7.4
Through-the-wall air conditioners – split system[1]	—	—	10.9	
Through-the-wall heat pumps – split system[1]	—	—	10.9	7.1
Through-the-wall air conditioners – single package[1]	—	—	10.6	
Through-the-wall heat pumps – single package[1]	—	—	10.6	7.0
Small duct, high velocity air conditioner systems	—	—	13.0	
Small duct, high velocity heat pump systems	—	—	13.0	7.7

[1] This product class applies to models manufactured prior to January 23, 2010.

Table C-3
Standards for Air-Cooled Air Conditioners and Air-Source Heat Pumps Subject to EPAct
(Standards Effective January 1, 2010 do not apply To Single Package Vertical Air Conditioners)

Appliance	*Cooling Capacity (Btu/hr)*	*System Type*	*Minimum Efficiency*			
			Effective January 1, 1994[1] or January 1, 1995[2]	*Effective June 15, 2008*	*Effective January 1, 2010*	
					Air Conditioners	*Heat Pumps*
Air-cooled unitary air conditioners and heat pumps (cooling mode)	< 65,000 *	Split system	10.0 SEER[1]	13.0 SEER		
	< 65,000 *	Single package	9.7 SEER[1]	13.0 SEER		
	≥ 65,000 and < 135,000	All	8.9 EER[1]		11.2 EER[3] 11.0 EER[4]	11.0 EER[3] 10.8 EER[4]
	≥ 135,000 and < 240,000	All	8.5 EER[2]		11.0 EER[3] 10.8 EER[4]	10.6 EER[3] 10.4 EER[4]
	≥ 240,000 and < 760,000	All			10.0 EER[3] 9.8 EER[4]	9.5 EER[3] 9.3 EER[4]
Air-cooled unitary air-conditioning heat pumps (heating mode)	< 65,000 *	Split system	6.8 HSPF[1]	7.7 HSPF		
	< 65,000 *	Single package	6.6 HSPF[1]	7.7 HSPF		
	≥ 65,000 and < 135,000	All	3.0 COP[1]		3.3 COP	
	≥ 135,000 and < 240,000	All	2.9 COP[2]		3.2 COP	
	≥ 240,000 and < 760,000	All			3.2 COP	

* Three phase models only.
[3] Applies to equipment that has electric resistance heat or no heating.
[4] Applies to equipment with all other heating-system types that are integrated into the unitary equipment.

Table C-4
Standards for Evaporatively-Cooled Air Conditioners

Appliance	*Cooling Capacity (Btu per hour)*	*Minimum EER*	
		Effective October 29, 2003	*Effective October 29, 2004*
Evaporatively-cooled air conditioners	< 65,000	12.1	12.1
	≥ 65,000 and < 135,000	11.5[1]	11.5[1]
	≥ 135,000 < 240,000	9.6	11.0

[1] Deduct 0.2 from the required EER for units with heating sections other than electric resistance heat.

Table C-5
Standards for Water-Cooled Air Conditioners and Water-Source Heat Pumps

Appliance	*Cooling Capacity (Btu per hour)*	*Minimum Efficiency*			
		Effective October 29, 2003		*Effective October 29, 2004*	
		Minimum		*Minimum*	
		EER	*COP*	*EER*	*COP*
Water-cooled air conditioners	< 17,000	12.1	—	12.1	—
Water-source heat pumps	< 17,000	11.2	4.2	11.2	4.2
Water-cooled air conditioners	≥ 17,000 and < 65,000	12.1	—	12.1	—
Water-source heat pumps	≥ 17,000 and < 65,000	12.0	4.2	12.0	4.2
Water-cooled air conditioners	≥ 65,000 and < 135,000	11.5[1]	—	11.5	—
Water-source heat pumps	≥ 65,000 and < 135,000	12.0	4.2	12.0	4.2
Water-cooled air conditioners	≥ 135,000 and < 240,000	9.6	—	11.0	—
Water-source heat pumps	≥ 135,000 and < 240,000	9.6	2.9	9.6	2.9

[1] Deduct 0.2 from the required EER for units with heating sections other than electric resistance heat.

Table C-6
Standards for Single Package Vertical Air Conditioners and Single Package Vertical Heat Pumps Manufactured on or After January 1, 2010

Appliance	*Cooling Capacity (BTU/hr)*	*System Type*	*Minimum Efficiency*	
			Cooling Mode	*Heating Mode*
Single package vertical air conditioners	< 65,000	Single-phase	9.0 EER	N/A
	< 65,000	3-phase	9.0 EER	N/A
	≥ 65,000 and < 135,000	All	8.9 EER	N/A
	≥ 135,000 and < 240,000	All	8.6 EER	N/A
Single package vertical heat pumps	< 65,000	Single-phase	9.0 EER	3.0 COP
	< 65,000	3-phase	9.0 EER	3.0 COP
	≥ 65,000 and < 135,000	All	8.9 EER	3.0 COP
	≥ 135,000 and < 240,000	All	8.6 EER	2.9 COP

(2) **Gas-fired Air Conditioners and Heat Pumps.** There is no energy efficiency standard or energy design standard for gas-fired air conditioners or gas-fired heat pumps.

(3) **Other Central Air Conditioners.** See Sections 1605.2(c) and 1605.3(c) for energy efficiency standards for other central air conditioners.

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

(1) **Ceiling fans.** Ceiling fans manufactured on or after January 1, 2007, shall have the following features:

(A) Fan speed controls separate from any lighting controls;

(B) Adjustable speed controls (either more than 1 speed or variable speed);

(C) The capability of reversible fan action, except for:

1. Fans sold for industrial applications;
2. Fans sold for outdoor applications; and
3. Cases in which safety standards would be violated by the use of the reversible mode.

(2) **Ceiling fan light kits.**

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

1. The screw-based lamps required under Section 1605.1(d)(2)(A) shall:

a. Meet the ENERGY STAR Program requirements for Compact Fluorescent Lamps, version 3; or

b. Use light sources other than compact fluorescent lamps that have lumens per watt performance at least equivalent to comparable configured compact fluorescent lamps meeting the energy conservation standards described in Section 1605.1(d)(2)(A)1.

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

1. Meet the ENERGY STAR Program Requirements for Residential Light Fixtures version 4.0 issued by the Environmental Protection Agency; and
2. Be packaged with lamps to fill all sockets.

(C) Ceiling fan light kits with socket types other than those covered in sections 1605.1(d)(2)(A) and 1605.1(d)(2)(B), including candelabra screw base sockets, manufactured on or after January 1, 2009:

1. Shall not be capable of operating with lamps that total more than 190 watts; and
2. Shall be packaged to include the lamps described in Section 1605.1(d)(2)(C)1. with the ceiling fan light kits.

(3) **Dehumidifiers.** The energy factor for dehumidifiers manufactured on or after the effective dates shown shall be not less than the applicable values found in Table D-2.

Table D-2
Standards for Dehumidifiers

Product capacity (pint/day)	*Minimum energy factor (liters/kWh)*	
	Effective October 1, 2007	*Effective October 1, 2012*
25.00 or less	1.00	1.35
25.01 – 35.00	1.20	1.35
35.01 – 45.00	1.30	1.50
45.01 – 54.00	1.30	1.60
54.01 – 74.99	1.50	1.70
75.00 or more	2.25	2.50

(3) There are no energy efficiency standards or energy design standards for spot air conditioners, evaporative coolers, whole house fans, or residential exhaust fans. There are no efficiency standards for ceiling fans and ceiling fan light kits.

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

(1) **Gas Wall Furnaces, Gas Floor Furnaces, and Gas Room Heaters.** The AFUE of gas wall furnaces, gas floor furnaces, and gas room heaters shall be not less than the applicable values shown in Table E-2.

Table E-2
Standards for Gas Wall Furnaces, Floor Furnaces, and Room Heaters

Appliance	*Design Type*	*Capacity (Btu per hour)*	*Minimum AFUE (%)*
Wall furnace	Fan	≤ 42,000	73
Wall furnace	Fan	> 42,000	74
Wall furnace	Gravity	≤ 10,000	59
Wall furnace	Gravity	> 10,000 ≤ 12,000	60
Wall furnace	Gravity	> 12,000 ≤ 15,000	61
Wall furnace	Gravity	> 15,000 ≤ 19,000	62
Wall furnace	Gravity	> 19,000 ≤ 27,000	63
Wall furnace	Gravity	> 27,000 ≤ 46,000	64
Wall furnace	Gravity	> 46,000	65
Floor furnace	All	≤ 37,000	56
Floor furnace	All	> 37,000	57
Room heater	All	≤ 18,000	57
Room heater	All	> 18,000 and ≤ 20,000	58
Room heater	All	> 20,000 and ≤ 27,000	63
Room heater	All	> 27,000 and ≤ 46,000	64

Room heater	All	> 46,000	65

(2) **Central Gas Furnaces, Central Gas Boilers, Central Oil Furnaces, Central Oil Boilers and Electric Residential Boilers.** The AFUE, thermal efficiency, and combustion efficiency, as applicable, of central gas furnaces, central gas boilers, central oil furnaces, and central oil boilers manufactured on or after the effective dates shown shall be not less than the applicable values shown in Tables E-3 and E-4. Electric hot water residential boilers manufactured on or after September 1, 2012 shall meet the design standard shown in Table E-3.

Table E-3
Standards for Gas- and Oil-Fired Central Boilers and Electric Residential Boilers

Appliance	*Rated Input (Btu/hr)*	*Minimum Efficiency (%)*		
		AFUE		*Combustion Efficiency at Maximum Rated Capacity Effective January 1, 1994*
		Effective January 1, 1992	*Effective September 1, 2012*	
Gas steam boilers with single phase electrical supply	< 300,000	75	80 [1]	—
Gas hot water boilers with single phase electrical supply	< 300,000	80	82 [1,2]	—
Oil steam boilers with single phase electrical supply	< 300,000	—	82	—
Oil hot water boilers with single phase electrical supply	< 300,000	—	84 [2]	—
Electric steam residential boilers		—	NONE	—
Electric hot water residential boilers		—	NONE [2]	—
All other boilers with single phase electrical supply	< 300,000	80	—	—
Gas packaged boilers	≥ 300,000	—	—	80
Oil packaged boilers	≥ 300,000	—	—	83

[1] No constant burning pilot light design standard effective September 1, 2012.
[2] Automatic means for adjusting temperature design standard effective September 1, 2012.

(A) **Automatic Means for Adjusting Water Temperature.** The automatic means for adjusting the temperature design, shown as footnote 2 in Table E-3 immediately above, means:

1. **In General.** The manufacturer shall equip each gas, oil, and electric hot water boiler (other than a boiler equipped with a tankless domestic water heating coil) with automatic means for adjusting the temperature of the water supplied by the boiler to ensure that an incremental change in inferred heat load produces a corresponding incremental change in the temperature of water supplied.
2. **Single Input Rate.** For a boiler that fires at one input rate, the requirements of this subparagraph may be satisfied by providing an automatic means that allows the burner or heating element to fire only when the means has determined that the inferred heat load cannot be met by the residual heat of the water in the system.
3. **No Inferred Heat Load.** When there is no inferred heat load with respect to a hot water boiler, the automatic means described in clauses 1. and 2. shall limit the temperature of the water in the boiler to not more than 140ºF.
4. **Operation.** A boiler described in clause 1. or 2. shall be operable only when the automatic means described in clauses 1, 2, and 3 is installed.

(B) **EXCEPTION to Section 1605.1(e)(2):** A boiler that is manufactured to operate without any need for electricity or any electric connection, electric gauges, electric pumps, electric wires, or electric devices shall not be required to meet the efficiency standards or design standard that take effect for models manufactured on or after September 1, 2012.

Table E-4
Standards for Gas- and Oil-Fired Central Furnaces

Appliance	*Rated Input (Btu/hr)*	*Minimum Efficiency (%)*	
		AFUE	*Thermal Efficiency*
Mobile home gas and oil central furnaces with single phase electrical supply	< 225,000	75	—
All other gas and oil central furnaces with single phase electrical supply	< 225,000	78	—
Gas central furnaces	≥ 225,000	—	80
Oil central furnaces	≥ 225,000	—	81

(3) **Infrared Gas Heaters.** There is no energy efficiency standard or energy design standard for infrared gas heaters.

(4) **Unit Heaters.** Unit heaters manufactured on or after August 8, 2008 shall:

(A) Be equipped with an intermittent ignition device; and

(B) Have power venting or an automatic flue damper. An automatic vent damper is an acceptable alternative to an automatic flue damper for those unit heaters where combustion air is drawn from the conditioned space.

(5) **Other Gas and Oil Space Heaters.** See Section 1605.3(e) for standards for boilers, central furnaces, duct furnaces, and unit heaters manufactured before August 8,

2008 that are not federally-regulated consumer products or federally-regulated commercial and industrial equipment.

(f) Water Heaters.

(1) **Large Water Heaters.** The thermal efficiency and standby loss of large water heaters manufactured during the applicable time period shall be not less than the applicable values shown in Table F-3.

Table F-3
Standards for Large Water Heaters
Effective October 29, 2003

Appliance	*Input to Volume Ratio*	*Size (Volume)*	*Minimum Thermal Efficiency (%)*	*Maximum Standby Loss*[1,2]
Gas storage water heaters	< 4,000 Btu/hr/gal	any	80	$Q/800 + 110(V_r)^{1/2}$ Btu/hr
Gas instantaneous water heaters	≥ 4,000 Btu/hr/gal	< 10 gal	80	–
		≥ 10 gal	80	$Q/800 + 110(V_r)^{1/2}$ Btu/hr
Gas hot water supply boilers	≥ 4,000 Btu/hr/gal	< 10 gal	80	–
		≥ 10 gal	80	$Q/800 + 110(V_r)^{1/2}$ Btu/hr
Oil storage water heaters	< 4,000 Btu/hr/gal	any	78	$Q/800 + 110(V_r)^{1/2}$ Btu/hr
Oil instantaneous water heaters	≥ 4,000 Btu/hr/gal	< 10 gal	80	–
		≥ 10 gal	78	$Q/800 + 110(V_r)^{1/2}$ Btu/hr
Oil hot water supply boilers	≥ 4,000 Btu/hr/gal	< 10 gal	80	–
		≥ 10 gal	78	$Q/800 + 110(V_r)^{1/2}$ Btu/hr
Electric storage water heaters	< 4,000 Btu/hr/gal	any	–	$0.3 + 27/V_m$ %/hr

[1] Standby loss is based on a 70° F temperature difference between stored water and ambient requirements. In the standby loss equations, V_r is the rated volume in gallons, V_m is the measured volume in gallons, and Q is the nameplate input rate in Btu/hr.

[2] Water heaters and hot water supply boilers having more than 140 gallons of storage capacity are not required to meet the standby loss requirement if the tank surface is thermally insulated to R-12.5, if a standing pilot light is not installed, and for gas- or oil-fired storage water heaters, there is a flue damper or fan-assisted combustion.

(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-4.

Table F-4
Standards for Small Federally-Regulated Water Heaters

Appliance	*Minimum Energy Factor*	
	Effective April 15, 1991	*Effective January 20, 2004*
Gas-fired storage-type water heaters	0.62 – (.0019 x V)	0.67 – (.0019 x V)
Oil-fired water heaters (storage and instantaneous)	0.59 – (.0019 x V)	0.59 – (.0019 x V)
Electric storage water heaters (excluding tabletop water heaters)	0.93 – (.00132 x V)	0.97 – (.00132 x V)
Electric tabletop water heaters	0.93 – (.00132 x V)	0.93 – (.00132 x V)
Gas-fired instantaneous water heaters	0.62 – (.0019 x V)	0.62 – (.0019 x V)
Electric instantaneous water heaters (excluding tabletop water heaters)	0.93 – (.00132 x V)	0.93 – (.00132 x V)
Heat pump water heaters	0.93 – (.00132 x V)	0.97 – (.00132 x V)
V = rated volume in gallons.		

(3) **Booster Water Heaters.** There is no energy efficiency standard or energy design standard for booster water heaters.

(4) **Other Water Heaters.** See Section 1605.3(f) for standards for other water heaters.

(5) **Combination Space-Heating and Water-Heating Appliances.** See Section 1605.3(e) for standards for combination space-heating and water-heating appliances.

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

(1) **Energy Efficiency Standard for Gas-Fired Pool Heaters and Oil-Fired Pool Heaters.** The thermal efficiency of gas-fired pool heaters and oil-fired pool heaters shall be not less than 78 percent.

(2) **Energy Efficiency Standards for Heat Pump Pool Heaters.** See Section 1605.3(g) for energy efficiency standards for heat pump pool heaters.

(3) **Energy Efficiency Standard for Electric Resistance Pool Heaters.** There is no energy efficiency standard for electric resistance pool heaters.

(4) **Energy Design Standards for Pool Heaters.** See Section 1605.3(g) for energy design standards for pool heaters.

(5) **Energy Efficiency Standards for Portable Electric Spas.** See Section 1605.3(g) for energy efficiency standards for portable electric spas.

(6) **Energy Efficiency Standards and Energy Design Standards for Residential Pool Pump and Motor Combinations and Replacement Residential Pool Pump Motors.** See Section 1605.3(g) for energy efficiency standards and energy design standards for residential pool pump and motor combinations and replacement residential pool pump motors.

Plumbing Fittings.

(1) **Showerheads, Faucets, Aerators, and Wash Fountains.** The flow rate of showerheads, lavatory faucets, kitchen faucets, lavatory replacement aerators, kitchen replacement aerators, wash fountains, and metering faucets shall be not greater than the applicable values shown in Table H-1. Showerheads shall also meet the requirements of ASME/ANSI Standard A112.18.1M-1996, 7.4.4(a).

Table H-1
Standards for Plumbing Fittings

Appliance	*Maximum Flow Rate*
Showerheads	2.5 gpm at 80 psi
Lavatory faucets	2.2 gpm at 60 psi
Kitchen faucets	2.2 gpm at 60 psi
Replacement aerators	2.2 gpm at 60 psi
Wash fountains	$2.2 \times \frac{\text{rim space (inches)}}{20}$ gpm at 60 psi
Metering faucets	0.25 gallons/cycle
Metering faucets for wash fountains	$0.25 \times \frac{\text{rim space (inches)}}{20}$ gpm at 60 psi

(2) **Showerhead-Tub Spout Diverter Combinations.** Showerhead-tub spout diverter combinations shall meet both the standard for showerheads and the standard for tub spout diverters.

(3) **Tub Spout Diverters.** See Section 1605.3(h) for standards for tub spout diverters.

(4) **Commercial Pre-rinse Spray Valves.**

(A) The flow rate of commercial pre-rinse spray valves manufactured on or after January 1, 2006 shall be equal to or less than 1.6 gpm at 60 psi.

(B) See Section 1605.3(h) for design standards for commercial pre-rinse spray valves.

(i) Plumbing Fixtures.

The water consumption of water closets and urinals shall be not greater than the values shown in Table I.

Table I
Standards for Plumbing Fixtures

Appliance	*Maximum Gallons per Flush*
Gravity tank-type water closets	1.6
Flushometer tank water closets	1.6
Electromechanical hydraulic water closets	1.6
Blowout water closets	3.5
Trough-type urinals	$\frac{\text{trough length (inches)}}{16}$
Other urinals	1.0

(j) Fluorescent Lamp Ballasts and Replacement Fluorescent Lamp Ballasts.

(1) The ballast efficacy factor of the following types of fluorescent lamp ballasts shall be not less than the applicable values shown in Tables J-1 and J-2, except those fluorescent lamp ballasts (i) designed for dimming to 50 percent or less of maximum output, (ii) designed for use with two F96T12HO lamps, in ambient temperatures of 20°F or less, or (iii) with a power factor of less than 0.90 and designed and labeled for use only in residential buildings are excluded:

(A) replacement fluorescent lamp ballasts manufactured on or before June 30, 2010;

(B) fluorescent lamp ballasts manufactured on or after January 1, 1990;

(C) fluorescent lamp ballasts sold by the manufacturer on or after April 1, 1990; and

(D) fluorescent lamp ballasts incorporated into a luminaire by a luminaire manufacturer on or after April 1, 1991.

Table J-1
Standards for Fluorescent Lamp Ballasts and Replacement Fluorescent Lamp Ballasts

Application for Operation of	*Ballast Input Voltage*	*Total Nominal Lamp Watts*	*Minimum Ballast Efficacy Factor*	
one F40T12 lamp	120 or 277	40	2.29[1]	1.805[2]
two F40T12 lamps	120	80	1.17[1]	1.060[2]
	277	80	1.17[1]	1.050[2]
two F96T12 lamps	120 or 277	150	0.63[1]	0.570[2]
two F96T12HO lamps	120 or 277	220	0.39[1]	0.390[2]

[1] For fluorescent lamp ballasts manufactured on or after April 1, 2005; sold by the manufacturer on or after July 1, 2005; or incorporated into a luminaire by a luminaire manufacturer on or after April 1, 2006.

[2] For fluorescent lamp ballasts designed, marked, and shipped as replacement ballasts.

Table J-2
Standards for Fluorescent Lamp Ballasts[1]

Application for Operation of	*Ballast Input Voltage*	*Total Nominal Lamp Watts*	*Minimum Ballast Efficacy Factor*
one F34T12 lamp	120 or 277	34	2.61
two F34T12 lamps	120 or 277	68	1.35
two F96T12/ES lamps	120 or 277	120	0.77
two F96T12HO/ES lamps	120 or 277	190	0.42

[1] For fluorescent lamp ballasts manufactured on or after July 1, 2009; sold by the manufacturer on or after October 1, 2009; or fluorescent lamp ballasts incorporated into a luminaire by a luminaire manufacturer on or after July 1, 2010.

(2) All fluorescent lamp ballasts covered by Tables J-1 or J-2 except replacement fluorescent lamp ballasts shall have a power factor of 0.90 or greater.

(3) **Mercury Vapor Lamp Ballasts.** Mercury vapor lamp ballasts shall not be manufactured or imported into the United States after January 1, 2008.

(4) There are no energy efficiency standards or energy design standards for ballasts designed to operate T5 lamps, T8 lamps, three T12 lamps, or four T12 lamps.

(k) Lamps.

(1) **Federally-Regulated General Service Fluorescent Lamps.** The average lamp efficacy and the color rendering index of federally-regulated general service fluorescent lamps shall be not less than the applicable values shown in Table K-1.

Table K-1
Standards for Federally-Regulated General Service Fluorescent Lamps

Appliance	*Nominal Lamp Wattage*	*Minimum Color Rendering Index (CRI)*	*Minimum Average Lamp Efficacy (LPW)*
4-foot medium bi-pin lamps	> 35	69	75.0
	≤ 35	45	75.0
2-foot U-shaped lamps	> 35	69	68.0
	≤ 35	45	64.0
8-foot slimline lamps	> 65	69	80.0
	≤ 65	45	80.0
8-foot high output lamps	> 100	69	80.0
	≤ 100	45	80.0

(2) **Federally-Regulated Incandescent Reflector Lamps.** The average lamp efficacy of federally-regulated incandescent reflector lamps shall be not less than the applicable values shown in Table K-2, subject to the following:

(A) The standards specified in Table K-2 shall apply with respect to:

1. ER incandescent reflector lamps, BR incandescent reflector lamps, BPAR incandescent reflector lamps, and similar bulb shapes on and after January 1, 2008; and
2. Incandescent reflector lamps with a diameter of more than 2.25 inches, but not more than 2.75 inches, on and after June 15, 2008.

(B) The standards specified in Table K-2 shall not apply to the following types of incandescent reflector lamps:

1. Lamps rated at 50 watts or less that are ER30, BR30, BR40, or ER40;
2. Lamps rated at 65 watts that are BR30, BR40, or ER40 lamps; and
3. R20 incandescent reflector lamps rated 45 watts or less.

Table K-2
Standards for Federally-Regulated Incandescent Reflector Lamps

Nominal Lamp Wattage	*Minimum Average Lamp Efficacy (LPW)*
40-50	10.5
51-66	11.0
67-85	12.5
86-115	14.0
116-155	14.5
156-205	15.0

(3) **Medium Base Compact Fluorescent Lamps.** A bare lamp and covered lamp (no reflector) medium base compact fluorescent lamp manufactured on or after January 8, 2007, shall meet the requirements set forth in Table K-3.

Table K-3
Standards for Medium Base Compact Fluorescent Lamps

Factor	*Requirements*
Lamp Power (Watts) and Configuration[1]	*Minimum Efficacy: lumens/watt (Based upon initial lumen data)*[2]
Bare Lamp: Lamp Power < 15 Lamp Power ≥ 15	 45.0 60.0
Covered Lamp (no reflector) Lamp Power < 15 15 ≥ Lamp Power < 19 19 ≥ Lamp Power < 25 Lamp Power ≥ 25	 40.0 48.0 50.0 55.0
1,000-hour Lumen Maintenance	The average of at least 5 lamps must be a minimum 90% of initial (100-hour) lumen output @ 1,000 hours of rated life.
Lumen Maintenance	80% of initial (100-hour) rating at 40 percent of rated life (per ANSI C78.5 Clause 4.10).
Rapid Cycle Stress Test	Per ANSI C78.5 and IESNA LM-65 (Clauses 2, 3, 5, and 6) *Exception:* Cycle times must be 5 minutes on, 5 minutes off. Lamp will be cycled once for every two hours of rated life. At least 5 lamps *must meet or exceed* the minimum number of cycles.
Average Rated Lamp Life	≥ 6,000 hours as declared by the manufacturer on the packaging. 80% of rated life, statistical methods may be used to confirm lifetime claims based on sampling performance.
[1] Take performance and electrical requirements at the end of the 100-hour aging period according to ANSI Standard C78.5. The lamp efficacy shall be the average of the lesser of the lumens per watt measured in the base up and/or other specified positions. Use wattages placed on packaging to select proper specification efficacy in this table, not measured wattage. Labeled wattages are for reference only.	
[2] Efficacies are based on measured values for lumens and wattages from pertinent test data. Wattages and lumens placed on packages may not be used in calculation and are not governed by this specification. For multi-level or dimmable systems, measurements shall be at the highest setting. Acceptable measurement error is ±3%.	

(4) **Federally-Regulated General Service Incandescent Lamps and Modified Spectrum General Service Incandescent Lamps.** The energy consumption rate of federally regulated general service incandescent lamps and modified spectrum general service incandescent lamps, manufactured on or after the effective dates shown, shall be no greater than the maximum rated wattage shown in Tables K-4 and K-5.

(A) These standards apply to each lamp that: (i) is intended for a general service or general illumination application (whether incandescent or not); (ii) has a medium screw base or any other screw base not defined in ANSI C81.61-2006; (iii) is capable of being operated at a voltage at least partially within the range of 110 to 130 volts; and (iv) is manufactured or imported after December 31, 2011.

(B) Each lamp described in Section 1604(k)(4)(A) shall have a color rendering index that is greater than or equal to:

1. 80 for nonmodified spectrum lamps; or
2. 75 for modified spectrum lamps.

Table K-4
Standards for Federally-Regulated General Service Incandescent Lamps

Rated Lumen Ranges	*Maximum Rate Wattage*	*Minimum Rate Lifetime*	*Effective Date*
1490-2600	72	1,000 hours	January 1, 2012
1050 – 1489	53	1,000 hours	January 1, 2013
750 – 1049	43	1,000 hours	January 1, 2014
310 – 749	29	1,000 hours	January 1, 2014

Table K-5
Standards for Federally-Regulated Modified Spectrum General Service Incandescent Lamps

Rated Lumen Ranges	*Maximum Rate Wattage*	*Minimum Rate Lifetime*	*Effective Date*
1118-1950	72	1,000 hours	January 1, 2012
788-1117	53	1,000 hours	January 1, 2013
563-787	43	1,000 hours	January 1, 2014
232-562	29	1,000 hours	January 1, 2014

(5) **Candelabra Base Incandescent Lamps and Intermediate Base Incandescent Lamps.** The energy consumption rate of federally regulated candelabra base incandescent lamps and intermediate base incandescent lamps, manufactured on or after January 1, 2012, shall be no greater than the maximum rated wattage shown in Tables K-6.

Table K-6
Standards for Federally Regulated Candelabra Base Incandescent Lamps and Intermediate Base Incandescent Lamps

Lamp Base Type	*Maximum Rated Wattage*
Candelabra	60
Intermediate	40

(6) See Section 1605.3(k) for energy efficiency standards for state-regulated general service incandescent lamps and state-regulated incandescent reflector lamps.

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) **Emergency Lighting.** The input power of an illuminated exit sign manufactured on or after January 1, 2006 shall not exceed five watts per face.

(2) **Self-Contained Lighting Controls.** See Section 1605.3(*l*) for energy design standards for self-contained lighting controls.

(m) Traffic Signal Modules and Traffic Signal Lamps.

(1) **Traffic Signals for Vehicle and Pedestrian Control.** Federally regulated traffic signals for vehicle and pedestrian control manufactured on or after January 1, 2006 shall have a nominal wattage and maximum wattage no greater than the values shown in Table M-1, and shall be installed with compatible electrically connected signal control interface devices and conflict monitoring systems.

Table M-1
Standards for Traffic Signals for Vehicle and Pedestrian Control

Appliance	*Maximum Wattage (at 74°C)*	*Nominal Wattage (at 25°C)*
Traffic Signal Module Type:		
12-inch; Red Ball	17	11
8-inch; Red Ball	13	8
12-inch; Red Arrow	12	9
12-inch; Green Ball	15	15
8-inch; Green Ball	12	12
12-inch; Green Arrow	11	11
Pedestrian Module Type:		
Combination Walking Man/Hand	16	13
Walking Man	12	9
Orange Hand	16	13

(2) See Section 1605.3(m) for energy efficiency standards for traffic signal modules for pedestrian control sold or offered for sale in California.

(n) Luminaires and Torchieres.

(1) **Torchieres.** Torchieres manufactured on or after January 1, 2006 shall consume not more than 190 watts of power and shall not be capable of operating with lamps that total more than 190 watts.

(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:

1. a minimum ballast efficiency of 92 percent for wattages greater than 250 watts; and
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.

(o) Dishwashers.

The energy factor, maximum energy use, and maximum water use of dishwashers that are consumer products manufactured on or after the effective dates shown shall meet the applicable values shown in Table O.

Table O
Standards for Dishwashers

Appliance	*Effective May 14, 1994*	*Effective January 1, 2010*	
	Minimum Energy Factor (cycles/kWh)	*Maximum Energy Use (kWh/year)*	*Maximum Water Use (gallons/cycle)*
Compact dishwashers	0.62	260	4.5
Standard dishwashers	0.46	355	6.5

(p) Clothes Washers.

(1) **Energy Efficiency Standards for Residential Clothes Washers.** The modified energy factor and water factor of clothes washers manufactured on or after the effective dates shown and that are consumer products shall be not less than the applicable values shown in Table P-2.

Table P-2
Energy Efficiency Standards for Residential Clothes Washers

Appliance	*Minimum Modified Energy Factor Effective January 1, 2007*	*Maximum Water Factor Effective January 1, 2011*
Top-loading compact clothes washers	0.65	--
Top-loading standard clothes washers	1.26	9.5
Top-loading, semi-automatic	N/A[1]	--
Front-loading clothes washers	1.26	9.5
Suds-saving	N/A[1]	--
[1] Must have an unheated rinse water option.		

(2) **Energy Design Standard for Top-Loading Semi-Automatic Clothes Washers and Suds-Saving Clothes Washers.** Top-loading semi-automatic clothes washers that are consumer products and suds-saving clothes washers that are consumer products shall have an unheated rinse water option and do not need to meet the Modified Energy Factor standard shown in Table P-2.

(3) **Commercial Clothes Washers.** Commercial clothes washers manufactured on or after January 1, 2007 shall have a modified energy factor of at least 1.26 and a water consumption factor of not more than 9.5.

(4) **Water Efficiency Standards for Clothes Washers.** See Section 1605.2(p) for water efficiency standards for clothes washers.

(q) Clothes Dryers.

Energy Efficiency Standards for Gas Clothes Dryers and Electric Clothes Dryers. The energy factor of gas clothes dryers that are consumer products and electric clothes dryers that are consumer products shall be not less than the applicable values shown in Table Q.

Table Q
Standards for Clothes Dryers

Appliance	*Minimum Energy Factor (lbs/kWh)*
Electric, standard clothes dryers	3.01
Electric, compact, 120 volt clothes dryers	3.13
Electric, compact, 240 volt clothes dryers	2.90
Gas clothes dryers	2.67

(r) Cooking Products and Food Service Equipment.

(1) **Energy Design Standard for Gas Cooking Products with an Electrical Supply Cord.** Gas cooking products that are consumer products and that are equipped with an electrical supply cord shall not be equipped with a constant burning pilot.

(2) **Hot Food Holding Cabinets.** See Section 1605.3(r) for energy efficiency standards for commercial hot food holding cabinets.

(3) **Other Cooking Products and Food Service Equipment.** There is no energy efficiency standard or energy design standard for other cooking products or for food service equipment.

(s) Electric Motors.

(1) **Standards for Electric Motors.** Except as provided in Section 1605.1(s)(2), the nominal full-load efficiency of all electric motors manufactured (alone or as a component of another piece of equipment) after October 24, 1997, or in the case of an electric motor which requires listing or certification by a nationally recognized safety testing laboratory, after October 24, 1999, and that are federally-regulated commercial and industrial equipment shall be not less than the applicable values shown in Table S-1.

Table S-1
Standards for Electric Motors

Motor Horsepower/Standard Kilowatt Equivalent	Minimum Nominal Full-Load Efficiency					
	Open Motors			Closed Motors		
	6 poles	4 poles	2 poles	6 poles	4 poles	2 poles
1/0.75	80.0	82.5	. . .	80.0	82.5	75.5
1.5/1.1	84.0	84.0	82.5	85.5	84.0	82.5
2/1.5	85.5	84.0	84.0	86.5	84.0	84.0
3/2.2	86.5	86.5	84.0	87.5	87.5	85.5
5/3.7	87.5	87.5	85.5	87.5	87.5	87.5
7.5/5.5	88.5	88.5	87.5	89.5	89.5	88.5
10/7.5	90.2	89.5	88.5	89.5	89.5	89.5
15/11	90.2	91.0	89.5	90.2	91.0	90.2
20/15	91.0	91.0	90.2	90.2	91.0	90.2
25/18.5	91.7	91.7	91.0	91.7	92.4	91.0
30/22	92.4	92.4	91.0	91.7	92.4	91.0
40/30	93.0	93.0	91.7	93.0	93.0	91.7
50/37	93.0	93.0	92.4	93.0	93.0	92.4
60/45	93.6	93.6	93.0	93.6	93.6	93.0
75/55	93.6	94.1	93.0	93.6	94.1	93.0
100/75	94.1	94.1	93.0	94.1	94.5	93.6
125/90	94.1	94.5	93.6	94.1	94.5	94.5
150/110	94.5	95.0	93.6	95.0	95.0	94.5
200/150	94.5	95.0	94.5	95.0	95.0	95.0

(A) For purposes of determining the required minimum nominal full load efficiency of an electric motor that has a horsepower or kilowatt rating between two horsepowers or kilowattages shown in Table S-1, each such motor shall be deemed to have a horsepower or kilowatt rating that is listed in Table S-1. The rating that the motor is deemed to have shall be determined as follows:

1. A horsepower at or above the midpoint between the two consecutive horsepowers shall be rounded up to the higher of the two horsepowers;
2. A horsepower below the midpoint between the two consecutive horsepowers shall be rounded down to the lower of the two horsepowers; or
3. A kilowatt rating shall be directly converted from kilowatts to horsepower using the formula, 1 kilowatt = (1/0.746) horsepower, without calculating beyond three significant decimal places, and the resulting horsepower shall be rounded in accordance with Sections 1605.1(s)(1)(A)1. or 1605.1(s)(1)(A)2., whichever applies.

(2) The nominal full-load of those electric motors listed in Table S-2, manufactured on or after December 19, 2010, shall have a nominal full-load efficiency not less than the applicable values shown in the NEMA MG-1 (2006) Tables referenced in Table S-2.

Table S-2
Standards for Electric Motors
Manufactured on or After December 19, 2010

Appliance	*Horsepower*	*Minimum Nominal Full-Load Efficiency (as referenced in NEMA MG-1 (2006) Table):*
General purpose electric motors (subtype I)	≥ 1 < 200	Table 12-12
Fire Pump Motors	All	Table 12-11
General purpose electric motors (subtype II)	≥ 1 < 200	Table 12-11
NEMA Design B, general purpose electric motors	> 200 ≤	Table 12-11

(t) Distribution Transformers.

(1) **Low-Voltage Dry-Type Distribution Transformers.** The efficiency of a low-voltage dry-type distribution transformer manufactured on or after January 1, 2007, shall be not less than that required for their kVA rating as shown in Table T-3. Low-voltage dry-type distribution transformers with kVA ratings not appearing in Table T-3 shall have their minimum efficiency determined by linear interpolation of the kVA and efficiency values immediately above and below that kVA rating.

Table T-3
Standards for Low-Voltage Dry-Type Distribution Transformers

Single phase		*Three phase*	
kVA	*Efficiency (%)*[1]	*kVA*	*Efficiency (%)*[1]
15	97.7	15	97.0
25	98.0	30	97.5
37.5	98.2	45	97.7
50	98.3	75	98.0
75	98.5	112.5	98.2
100	98.6	150	98.3
167	98.7	225	98.5
250	98.8	300	98.6
333	98.9	500	98.7
		750	98.8
		1000	98.9

[1] Efficiencies are determined at the following reference conditions:
(1) for no-load losses, at the temperature of 20°C, and (2) for load-losses, at the temperature of 75°C and 35 percent of nameplate load.
(Source: Table 4–2 of NEMA Standard TP–1–2002, "Guide for Determining Energy Efficiency for Distribution Transformers.")

(2) **Liquid-Immersed Distribution Transformers.** The efficiency of a liquid-immersed distribution transformer manufactured on or after January 1, 2010, shall be no less than

that required for their kVA rating as shown the table T-4. Liquid-immersed distribution transformers with kVA ratings not appearing inTableT-4 shall have their minimum efficiency level determined by linear interpolation of the kVA and efficiency values immediately above and below that kVA rating.

Table T-4
Standards for Liquid-Immersed Distribution Transformers

Single phase		Three phase	
kVA	**Efficiency (%)[1]**	**kVA**	**Efficiency (%)[1]**
10	98.62	15	98.36
15	98.76	30	98.62
25	98.91	45	98.76
37.5	99.01	75	98.91
50	99.08	112.5	99.01
75	99.17	150	99.08
100	99.23	225	99.17
167	99.25	300	99.23
250	99.32	500	99.25
333	99.36	750	99.32
500	99.42	1000	99.36
667	99.46	1500	99.42
833	99.49	2000	99.46
		2500	99.49

[1] Note: All efficiency values are at 50 percent of nameplate-rated load, determined when tested according to the test procedure in Section 1604(t).

(3) **Medium-Voltage Dry-Type Distribution Transformers.** The efficiency of a medium-voltage dry-type distribution transformer manufactured on or after January 1, 2010, shall be no less than that required for their kVA and BIL rating in Table T-5. Medium-voltage dry-type distribution transformers with kVA ratings not appearing in Table T-5 shall have their minimum efficiency level determined by linear interpolation of the kVA and efficiency values immediately above and below that kVA rating.

Table T-5
Standards for Medium-Voltage Dry-Type Distribution Transformers

Single phase				*Three phase*			
BIL kVA	***20-45 kV Efficiency[1] (%)***	***46-95 kV efficiency[1] (%)***	***≥ 96 kV efficiency[1] (%)***	***BIL kVA***	***20-45 kV Efficiency[1] (%)***	***46-95 kV efficiency[1] (%)***	***≥ 96 kV efficiency[1] (%)***
15	98.10	97.86		15	97.50	97.18	
25	98.33	98.12		30	97.90	97.63	
37.5	98.49	98.30		45	98.10	97.86	
50	98.60	98.42		75	98.33	98.12	
75	98.73	98.57	98.53	112.5	98.49	98.30	
100	98.82	98.67	98.63	150	98.60	98.42	
167	98.96	98.83	98.80	225	98.73	98.57	98.53
250	99.07	98.95	98.91	300	98.82	98.67	98.63
333	99.14	99.03	98.99	500	98.96	98.83	98.80
500	99.22	99.12	99.09	750	99.07	98.95	98.91
667	99.27	99.18	99.15	1000	99.14	99.03	98.99
833	99.31	99.23	99.20	1500	99.22	99.12	99.09
				2000	99.27	99.18	99.15
				2500	99.31	99.23	99.20

[1] All efficiency values are at 50 percent of nameplate rated load, determined when tested according to the test procedure in Section 1604(t).

(u) Power Supplies.

(1) The energy factor for Class A external power supplies that are federally regulated and manufactured on or after July 1, 2008, shall be not less than the applicable values shown in Table U-1, except that:

(A) The standards in Table U-1 shall not apply to a Class A external power supply that is:

1. manufactured between July 1, 2008 and June 30, 2015; and
2. made available by the manufacturer as a service part or spare part for an end-use product that (i) constitutes the primary load; and (ii) was manufactured before July 1, 2008.

(B) An energy efficiency standard for external power supplies shall not constitute an energy efficiency standard for the separate end-use product to which the external power supplies is connected.

Table U-1
Standards for Class A External Power Supplies
That are Federally Regulated

Nameplate Output	***Minimum Efficiency in Active Mode (Decimal equivalent of a Percentage)***
< 1 watt	0.5 * Nameplate Output
≥ 1 and ≤ 51 watts	0.09*Ln(Nameplate Output) + 0.5
> 51 watts	0.85
	Maximum Energy Consumption in No-Load Mode
≤ 250 watts	0.5 watts
Where Ln (Nameplate Output) = Natural Logarithm of the nameplate output expressed in watts.	

(2) See Section 1605.3(u) for energy efficiency standards for state-regulated external power supplies.

(v) Consumer Audio and Video Equipment.

See Section 1605.3(v) for energy efficiency standards for consumer audio and video equipment.

(w) Battery Charger Systems.

There are no energy efficiency standards or energy design standards for battery charger systems.

The following documents are incorporated by reference in Section 1605.1.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME/ANSI A112.18.1M-1996 — Plumbing Fixture Fittings

Copies available from:
ASME International
Three Park Avenue
New York, NY 10016-5990
www.asme.org
Phone: (800) THE-ASME (U.S./Canada)
95-800-843-2763 (Mexico)
(973) 882-1167 (Outside North America)

NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG1-2006 — Motors and Generators

NEMA Standard TP-1-2002, Table 4-2 — Guide for Determining Energy Efficiency of Distribution Transformers

Copies available from: National Electric Manufacturers Association
1300 N. 17th Street, Suite 1847
Rosslyn, VA 22209
www.nema.org
Phone: (703) 841-3200
FAX: (703) 841-3300

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 Federally-Regulated Appliances.

(a) Refrigerators, Refrigerator-Freezers and Freezers.

See Sections 1605.1(a) and 1605.3(a) for energy efficiency standards and energy design standards for refrigeration equipment.

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

See Section 1605.1(b) for energy efficiency standards for room air conditioners, room air-conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps that are federally-regulated consumer products or federally-regulated commercial and industrial equipment.

(c) Central Air Conditioners.

(1) **Energy Efficiency Standards for Air-Cooled Air Conditioners and Air-Source Heat Pumps.**

(A) The EER, SEER, HSPF, and COP of air-cooled air conditioners and air-source heat pumps except space constrained products shall be not less than the applicable values shown in Table C-7.

(B) Each appliance of a type and cooling capacity covered by Table C-7 shall be equipped with a TXV.

EXCEPTION 1 to Section 1605.2(c)(1)(B): Instead of installing a TXV, a manufacturer may install any other device that is certified by the manufacturer to the Executive Director to result in an EER that is within 90 percent of the rated EER when tested at all of the following conditions:

1. Refrigerant charge at 70 percent of the refrigerant charge specified by the manufacturer of the appliance.
2. Refrigerant charge at 120 percent of the refrigerant charge specified by the manufacturer of the appliance.
3. Airflow at 80 percent of the airflow specified by the manufacturer of the appliance.

EXCEPTION 2 to Section 1605.2(c)(1)(B): Instead of installing a TXV, a manufacturer may install a sensing mechanism integral to the compressor-containing unit, and a signaling device installed on the outside of the compressor-containing unit that is certified by the manufacturer to perform all of the following:

1. The device shall produce a visible malfunction signal whenever the refrigerant charge is less than 90 percent or greater than 120 percent of the refrigerant charge specified by the manufacturer.
2. The device shall not produce a malfunction signal when the refrigerant charge is between 95 percent and 115 percent of the refrigerant charge specified by the manufacturer.

3. The device shall produce a visible indication of proper charge whenever it is not producing a malfunction signal.
4. The device shall produce visible signals in a form that is accessible to, and readily understood by individuals with no technical training.
5. The device shall perform its tests and meet the above criteria at least once per every 10 hours of air conditioner run time.
6. The device shall provide a visible signal that indicates the status of the refrigerant charge as of the time of the last test.

EXCEPTION 3 to Section 1605.2(c)(1)(B): Instead of installing a TXV, a manufacturer may install a device whose performance is determined by the Executive Director to be equivalent in energy savings to a TXV.

Table C-7
Standards for Air-Cooled Air Conditioners and Air-Source Heat Pumps

Appliance	***Cooling Capacity (Btu/hr)***	***Minimum Standards***	
			Effective on the effective date of the US DOE waiver from preemption, should such a waiver be granted
Single package air-cooled air conditioners	< 65,000		11.0 EER 13.0 SEER
Other air-cooled air conditioners	< 65,000		11.6 EER 13.0 SEER
Single package air-cooled heat pumps	< 65,000		11.0 EER 13.0 SEER 7.7 HSPF
Other air-cooled heat pumps	< 65,000		11.6 EER 13.0 SEER 7.9 HSPF
Air-cooled air conditioners	≥ 65,000 and < 135,000		11.0 EER
Air-source heat pumps	≥ 65,000 and < 135,000		11.0 EER 3.4 at 47°F. COP 2.4 at 17°F. COP
Air-cooled air conditioners	≥ 135,000 and < 240,000		10.8 EER
Air-source heat pumps	≥ 135,000 and < 240,000		10.8 EER 3.3 at 47°F. COP 2.2 at 17°F. COP

(2) See Sections 1605.1(c) and 1605.3(c) for other energy efficiency standards for these and other central air conditioners.

(3) **Gas-fired Air Conditioners and Heat Pumps.** There is no energy efficiency standard or energy design standard for gas-fired air conditioners or gas-fired heat pumps.

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

(1) See Sections 1605.1(d) for energy design standards for ceiling fans and ceiling fan light kits.

(2) See Sections 1605.1(d) for energy efficiency standards for dehumidifiers.

(3) There are no energy efficiency standards or energy design standards for spot air conditioners, evaporative coolers, whole house fans, or residential exhaust fans. There are no efficiency standards for ceiling fans and ceiling fan light kits.

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

(1) See Sections 1605.1(e) and 1605.3(e) for energy efficiency standards for gas and oil space heaters.

(2) See Section 1605.3(e) for standards for combination space-heating and water-heating appliances.

(f) Water Heaters.

(1) See Sections 1605.1(f) and 1605.3(f) for energy efficiency standards for water heaters.

(2) See Section 1605.3(e) for energy efficiency standards for combination space-heating and water-heating appliances.

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

(1) See Sections 1605.1(g) and 1605.3(g) for energy efficiency standards and energy design standards for pool heaters.

(2) See Section 1605.3(g) for energy efficiency standards and energy design standards for portable electric spas and residential pool pump and motor combinations and replacement residential pool pump motors.

(h) Plumbing Fittings.

See Sections 1605.1(h) and 1605.3(h) for water efficiency standards for plumbing fittings.

(i) Plumbing Fixtures.

See Section 1605.1(i) for water efficiency standards for plumbing fixtures that are federally-regulated consumer products.

(j) Fluorescent Lamp Ballasts.

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

(k) Lamps.

See Sections 1605.1(k) and 1605.3(k) for energy efficiency standards for lamps.

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) **Emergency Lighting.** See Section 1605.1(*l*) for energy efficiency standards for illuminated exit signs.

(2) **Self-Contained Lighting Controls.** See Section 1605.3(*l*) for energy design standards for self-contained lighting controls.

(m) Traffic Signal Modules and Traffic Signal Lamps.

See Sections 1605.1(m) and 1605.3(m) for energy efficiency standards for traffic signal modules and traffic signal lamps.

(n) Luminaires and Torchieres.

(1) See Section 1605.1(n) for energy efficiency standards and energy design standards for federally regulated metal halide light fixtures manufactured on or after January 1, 2009, and torchieres.

(2) See Section 1605.3(n) for energy efficiency standards and energy design standards for:

(A) metal halide luminaires sold or offered for sale in California that are manufactured

1. prior to January 1, 2009, or
2. on or after January 1, 2010; and

(B) under cabinet luminaires.

(o) Dishwashers.

See Section 1605.1(o) for energy efficiency standards for dishwashers that are federally-regulated consumer products.

(p) Clothes Washers.

(1) **Water Efficiency Standards for Residential Clothes Washers.**
The water factor of clothes washers that are consumer products shall be no greater than the applicable values shown in Table P-3.

Table P-3
Water Efficiency Standards for Clothes Washers

Appliance	*Maximum Water Factor (Gallons/cubic foot)*	
	Effective January 1, 2007	*Effective January 1, 2010*
Top-loading clothes washers	8.5	6.0
Front-loading clothes washers	8.5	6.0

(2) **Water Efficiency Standards for Commercial Clothes Washers.** See Section 1605.1(p) for energy efficiency standards and water efficiency standards for clothes washers that are not consumer products.

(3) **Energy Efficiency Standards for Clothes Washers.** See Section 1605.1(p) for energy efficiency standards and energy design standards for clothes washers.

(q) Clothes Dryers.

See Section 1605.1(q) for energy efficiency standards and energy design standards for clothes dryers that are federally-regulated consumer products.

(r) Cooking Products and Food Service Equipment.

(1) **Hot Food Holding Cabinets.** See Section 1605.3(r) for energy efficiency standards for commercial hot food holding cabinets.

(2) **Gas Cooking Appliances Equipped with an Electrical Supply Cord.** See Section 1605.1(r) for energy design standards for gas cooking products with an electrical supply cord.

(3) **Other Cooking Products and Food Service Equipment.** There is no energy efficiency standard for other cooking products or food service equipment.

(s) Electric Motors.

See Section 1605.1(s) for energy efficiency standards for electric motors that are federally-regulated commercial and industrial equipment.

(t) Distribution Transformers.

See Section 1605.1(t) for energy efficiency standards for low-voltage dry-type distribution transformers, liquid-immersed distribution transformers, and medium-voltage dry-type distribution transformers.

(u) Power Supplies.

(1) See Section 1605.1(u) for energy efficiency standards for Class A external power supplies that are federally regulated and manufactured on or after July 1, 2008.

(2) See Section 1605.3(u) for energy efficiency standards for state-regulated external power supplies.

(v) Consumer Audio and Video Equipment.

See Section 1605.3(v) for energy efficiency standards for consumer audio and video equipment.

(w) Battery Charger Systems.

There are no energy efficiency standards or energy design standards for battery charger systems.

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, Refrigerator-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-6.

Table A-6
Standards for Wine Chillers

Appliance	*Maximum Annual Energy Consumption (kWh)*
Wine chillers with manual defrost	13.7V + 267
Wine chillers with automatic defrost	17.4V + 344
V = volume in ft^3.	

(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-7.

Table A-7
Standards for Freezers that are Consumer Products

Appliance	*Maximum Annual Energy Consumption (kWh)*
Upright Freezers with manual defrost	7.55AV + 258.3
Upright Freezers with automatic defrost	12.43AV + 326.1
Chest Freezers	9.88AV + 143.7
AV = adjusted total volume, expressed in ft^3, which is 1.73 x freezer volume (ft^3).	

(3) **Energy Design Standard for Lighting of Cabinets and Wine Chillers.** Internal illumination of the following appliances, manufactured on or after March 1, 2003, shall be only by (1) T-8 fluorescent lamps with electronic ballasts, or (2) a lighting system that has no fewer lumens per watt than a system using only T-8 fluorescent lamps with electronic ballasts.

(A) remote reach-in cabinets with transparent doors; remote pass-through cabinets with transparent doors; and remote roll-in or roll-through cabinets with transparent doors;

(B) cabinets, without doors; and

(C) wine chillers that are not consumer products.

(4) **Energy Design Standards for Walk-In Coolers and Walk-In Freezers.**

(A) **All Walk-in Coolers and Walk-in Freezers.** Walk-in coolers and walk-in freezers manufactured on or after the effective dates shown in Table A-8, and before

January 1, 2009 with the applicable motor types shown in Table A-8, shall be manufactured with the required components shown in Table A-8.

Table A-8
Energy Design Standards for Walk-In Coolers and Walk-In Freezers Manufactured Before January 1, 2009

Motor Type	*Effective Date*	*Required Components*
All	January 1, 2006	Automatic door closers that firmly close all reach-in doors
All	January 1, 2006	Automatic door closers on all doors no wider than four foot or higher than seven foot, that firmly close walk-in doors that have been closed to within one inch of full closure
All	January 1, 2006	Envelope insulation > R-28 for Refrigerators
All	January 1, 2006	Envelope insulation > R-36 for Freezers
Condenser Fan Motors < 1 HP	January 1, 2006	(i) Electronically commutated motors, (ii) permanent split capacitor-type motors, (iii) polyphase motors > ½ HP, or (iv) motors of equivalent efficiency as determined by the Executive Director
Single-phase Evaporator Fan Motors < 1 HP and < 460 volts	January 1, 2006	(i) Electronically commutated motors or (ii) permanent split capacitor-type motors
Single-phase Evaporator Fan Motors < 1 HP and < 460 volts	January 1, 2008	Electronically commutated motors

(B) **Walk-in Coolers and Walk-in Freezers with Transparent Reach-in Doors.**

In addition to the requirements in (i), walk-in coolers and walk-in freezers with transparent reach-in doors that are manufactured on or after January 1, 2006 shall meet the following requirements:

1. transparent reach-in doors shall be of triple-pane glass with either heat-reflective treated glass or gas fill;
2. if the appliance has an anti-sweat heater without anti-sweat heat controls, then: the appliance shall have a total door rail, glass, and frame heater power draw of no more than 40 watts (freezers) or 17 watts (refrigerators) per foot of door frame width; and
3. if the appliance has an anti-sweat heater with anti-sweat heat controls, and the total door rail, glass, and frame heater power draw is more than 40 watts (freezers) or 17 watts (refrigerators) per foot of door frame width, then: the anti-sweat heat controls shall reduce the energy use of the anti-sweat heater in an amount corresponding to the relative humidity in the air outside the door or to the condensation on the inner glass pane.

(C) **Walk-in Coolers and Walk-in Freezers Manufactured on or after January 1, 2009.**

See Section 1605.1(a) for design standards for walk-in coolers and walk-in freezers manufactured on or after January 1, 2009.

(5) **Energy Efficiency Standard for Reach-in Cabinets, Pass-Through Cabinets, Reach-in or Roll-through Cabinets, and Wine Chillers That Are Not Consumer Products.** The daily energy consumption of reach-in cabinets, pass-through cabinets, roll-in or roll-through cabinets manufactured prior to January 1, 2010, refrigerated canned and bottled

beverage vending machines, and wine chillers that are not consumer products, manufactured on or after the effective dates shown shall be no greater than the applicable values shown in Table A-9.

(6) **Appliances Covered.**

(A) Reach-in cabinets include but are not limited to ice cream cabinets; milk or beverage cabinets; and milk, beverage, and ice cream cabinets.

(B) The appliances listed in paragraphs (3) and (5) and Table A-9 do not include preparation tables, refrigerated buffet and preparation tables, or work top tables.

Table A-9
Standards for Reach-In Cabinets, Pass-Through Cabinets, Roll-In or Roll-Through Cabinets Manufactured Prior to January 1, 2010, and Wine Chillers that are Not Consumer Products

Appliance	*Doors*	*Maximum Daily Energy Consumption(kWh)*			
		March 1, 2003	*August 1, 2004*	*January 1, 2006*	*January 1, 2007*
Reach-in cabinets, pass-through cabinets, and roll-in or roll-through cabinets that are refrigerators; and wine chillers that are not consumer products	Solid	0.125V + 4.22	0.125V + 2.76	0.10V + 2.04	0.10V + 2.04
	Transparent	0.172V + 5.78	0.172V + 4.77	0.172V + 4.77	0.12V + 3.34
Reach-in cabinets, pass-through cabinets, and roll-in or roll-through cabinets that are freezers (except ice cream freezers)	Solid	0.398V + 2.83	0.398V + 2.28	0.40V + 1.38	0.40V + 1.38
	Transparent	0.940V + 5.10	0.940V + 5.10	0.940V + 5.10	0.75V + 4.10
Reach-in cabinets, pass-through cabinets, and roll-in or roll-through cabinets that are freezers that are ice cream freezers	Solid	0.398V + 2.83	0.398V + 2.28	0.398V + 2.28	0.39V + 0.82
	Transparent	0.940V + 5.10	0.940V + 5.10	0.940V + 5.10	0.88V + 0.33
Reach-in cabinets that are refrigerator-freezers and that have an adjusted volume (AV) of 5.19 ft^3 or greater	Solid	0.273AV + 2.63	0.273AV + 1.65	0.273AV + 1.65	0.27AV – 0.71
Reach-in cabinets that are refrigerator-freezers and that have an adjusted volume (AV) of less than 5.19 ft^3	Solid or Transparent			0.70	0.70

(7) **Energy Efficiency Standard for Refrigerated Canned and Bottled Beverage Vending Machines.** The daily energy consumption of refrigerated canned and bottled beverage vending machines, manufactured on or after January 1, 2006 shall be no greater than the applicable values shown in Table A-10.

(8) **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 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-10
Standards for Refrigerated Canned and Bottled Beverage Vending Machines

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 (ft^3) AV = Adjusted Volume = [1.63 x freezer volume (ft^3)] + refrigerator volume (ft^3) C=Rated capacity (number of 12 ounce cans)			

(9) **Energy Efficiency Standards for Automatic Commercial Ice-Makers.** The daily energy use and the daily condenser water use of automatic commercial ice-makers manufactured on or after January 1, 2008 and before January 1, 2010, shall be no greater than the applicable values shown in Table A-11.

Table A-11
Standards for Automatic Commercial Ice-Makers

Equipment Type	*Type of Cooling*	*Harvest Rate (lbs ice/24 hrs)*	*Maximum Energy Use (kWh/100 lbs. Ice)*	*Maximum Condenser Water Use (gallons/100 lbs. ice)*
Ice-Making Head	Water	< 500	7.80 - .0055H	200 - .022H
		≥ 500 and < 1436	5.58 - .0011H	200 - .022H
		≥ 1436	4.0	200-.022H
Ice-Making Head	Air	< 450	10.26 - .0086H	Not Applicable
		≥ 450	6.89 - .0011H	Not Applicable
Remote-Condensing (but not remote compressor)	Air	< 1000	8.85 - .0038H	Not Applicable
		≥ 1000	5.10	Not Applicable
Remote-Condensing and Remote Compressor	Air	< 934	8.85 - .0038H	Not Applicable
		≥ 934	5.3	Not Applicable
Self-Contained	Water	< 200	11.40 - .0190H	191 - .0315H
		≥ 200	7.60	191 - .0315H
Self-Contained	Air	< 175	18.0 - .0469H	Not Applicable
		≥ 175	9.80	Not Applicable

H = harvest rate in pounds per 24 hours, which shall be reported within 5% of the tested value.
Water use is for the condenser only and does not include potable water used to make ice.

(10) **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.

(11) **Refrigerators without Doors and Freezers without Doors.** There are no energy efficiency standards for refrigerators without doors or freezers without doors.

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

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

See Section 1605.1(b) for energy efficiency standards for room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps that are federally-regulated consumer products or federally-regulated commercial and industrial equipment.

(c) Central Air Conditioners.

(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-8.

Table C-8
Standards for Ground Water-Source and Ground-Source Heat Pumps

Appliance	*Rating Condition*	*Minimum Standard*
Ground water-source heat pumps (cooling)	59°F entering water temperature	16.2 EER
Ground water-source heat pumps (heating)	50°F entering water temperature	3.6 COP
Ground-source heat pumps (cooling)	77°F entering brine temperature	13.4 EER
Ground-source heat pumps (heating)	32°F entering brine temperature	3.1 COP

(2) **Energy Efficiency Standards for Computer Room Air Conditioners.** The EER of air-cooled, water-cooled, glycol-cooled, and evaporatively-cooled computer room air conditioners manufactured on or after the effective dates shown, shall be not less than the applicable values shown in Tables C-9 and C-10.

Table C-9
Standards for Air-Cooled Computer Room Air Conditioners

Appliance	*Cooling Capacity (Btu/hr)*	*Minimum EER (Btu/watt-hour)*			
		Effective January 1, 1988	*Effective March 1, 2003*	*Effective January 1, 2004*	*Effective January 1, 2006*
Air-cooled computer room air conditioners	< 65,000	8.3	9.3	10.7	11.0
	≥ 65,000 and <135,000	7.7	8.3	10.4	10.4
	≥ 135,000 and < 240,000	—	7.9	10.2	10.2

Table C-10
Standards for Water-Cooled, Glycol-Cooled, and Evaporatively-Cooled Computer Room Air Conditioners

Appliance	*Cooling Capacity (Btu/hr)*	*Minimum EER (Btu/watt-hour)*			
		Effective January 1, 1988	*Effective March 1, 2003*	*Effective October 29, 2004*	*Effective October 29, 2006*
Water-cooled, glycol-cooled, and evaporatively-cooled computer room air conditioners	< 65,000	8.1	8.3	11.1	11.1
	≥ 65,000 and <135,000	8.4	9.5	10.5	10.5
	≥ 135,000 and < 240,000	—	8.6	8.6	10.0

(3) **Energy Efficiency Standards for Large Air-Cooled Unitary Air Conditioners.** Air-cooled unitary air conditioners with cooling capacities greater than or equal to 240,000 Btu per hour and less than 760,000 Btu per hour manufactured on or after October 1, 2006 and before January 1, 2010 shall have an Energy Efficiency Ratio (EER) of at least 10.0. See Section 1605.1(c) for energy efficiency standards for air-cooled unitary air conditioners with cooling capacities greater than or equal to 240,000 Btu per hour and less than 760,000 Btu per hour that are manufactured on or after January 1, 2010.

(4) **Gas-fired Air Conditioners and Heat Pumps.** There is no energy efficiency standard or energy design standard for gas-fired air conditioners or gas-fired heat pumps.

(5) **Other Central Air Conditioners.** See Sections 1605.1(c) and 1605.2(c) for energy efficiency standards for central air conditioners that are federally-regulated consumer products or federally-regulated commercial and industrial equipment.

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

(1) See Section 1605.1(d) for energy design standards for ceiling fans and ceiling fan light kits.

(2) See Section 1605.1(d) for energy efficiency standards for dehumidifiers.

(3) There are no energy efficiency standards or energy design standards for spot air conditioners, evaporative coolers, whole house fans, or residential exhaust fans. There are no efficiency standards for ceiling fans and ceiling fan light kits.

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

(1) **Boilers, Central Furnaces, Duct Furnaces, and Unit Heaters.**

(A) The efficiency of boilers, central furnaces, duct furnaces, and unit heaters shall be not less than, and the standby loss shall be not greater than, the applicable values shown in Tables E-5, E-6, E-7, and E-8. The

standards for unit heaters shown in Table E-8 only apply to models manufactured on or before August 8, 2008.

Table E-5
Standards for Boilers

Appliance	*Output (Btu/hr)*	*Standards*		
		Minimum AFUE %	*Minimum Combustion Efficiency % **	*Maximum Standby Loss (watts)*
Gas steam boilers with 3-phase electrical supply	< 300,000	75	—	—
All other boilers with 3-phase electrical supply	< 300,000	80	—	—
Natural gas, non-packaged boilers	≥ 300,000	—	80	147
LPG Non-packaged boilers	≥ 300,000	—	80	352
Oil, non-packaged boilers	≥ 300,000	—	83	—

*At both maximum and minimum rated capacity, as provided and allowed by the controls.

Table E-6
Standards for Furnaces

Appliance	*Application*	*Minimum Efficiency %*
Central furnaces with 3-phase electrical supply < 225,000 Btu/hour	Mobile Home	75 AFUE
	All others	78 AFUE or 80 Thermal Efficiency (at manufacturer's option)

Table E-7
Standards for Duct Furnaces

Appliance	*Fuel*	*Standards*		
		Minimum Thermal Efficiency %[1]		*Maximum Energy Consumption during standby (watts)*
		At maximum rated capacity	*At minimum rated capacity*	
Duct furnaces	Natural gas	80	75	10
Duct furnaces	LPG[2]	80	75	147

[1] As provided and allowed by the controls.
[2] Designed expressly for use with LPG.

Table E-8
Standards for Unit Heaters
Manufactured Before August 8, 2008

Appliance	*Fuel*	*Standards*		
		Minimum Thermal Efficiency %[1]		*Maximum Energy Consumption during standby (watts)*
		At maximum rated capacity	*At minimum rated capacity*	
Unit heaters	Natural gas	80	74	10
Unit heaters	LPG[2]	80	74	147
Unit heaters	Oil	81	81	N/A

[1] As provided and allowed by the controls.
[2] Designed expressly for use with LPG.

(B) Natural gas-fired unit heaters and duct furnaces manufactured on or after January 1, 2006, shall have either power venting or an automatic flue damper.

(C) The unit heater design standards set forth in this section shall be effective for models manufactured prior to August 8, 2008. See Section 1605.1(e) for design standards for unit heaters effective for models manufactured on or after August 8, 2008.

(2) **Oil Wall Furnaces, Oil Floor Furnaces and Infrared Gas Space Heaters.** There are no energy efficiency standards or energy design standards for oil wall furnaces, oil floor furnaces, or infrared gas space heaters.

(3) **Combination Space-Heating and Water-Heating Appliances.**

(A) If part of a combination space-heating and water-heating appliance is a water heater, that part shall comply with the applicable water heater standards in Sections 1605.1(f) and 1605.3(f).

(B) If part of a combination space-heating and water-heating appliance is a furnace, boiler, or other space heater, that part shall comply with the applicable furnace, boiler, or other space heater standards in Sections 1605.1(e) and 1605.3(e).

(C) Water heaters that are federally-regulated appliances, and that are contained in combination space-heating and water-heating appliances that are federally-regulated appliances, are required only to meet the standard for the applicable type of water heater, and are not required to meet any standard for space heaters.

(4) **Other Gas and Oil Space Heaters.** See Section 1605.1(e) for standards for gas and oil space heaters that are federally-regulated.

(f) Water Heaters.

(1) **Hot Water Dispensers and Mini-Tank Electric Water Heaters.** The standby loss of hot water dispensers and mini-tank electric water heaters manufactured on or after March 1, 2003 shall be not greater than 35 watts.

EXCEPTION to Section 1605.1(f)(1): Section 1605.3(f)(1) does not apply to any water heater:

1. that is within the scope of 42 U.S.C. Sections 6292(a)(4) or 6311(1)(F),

2. that has a rated storage volume of less than 20 gallons, and
3. for which there is no federal test method applicable to that type of water heater.

(2) **Small Water Heaters that are Not Federally-Regulated Consumer Products.** The energy factor of small water heaters manufactured on or after March 1, 2003 that are not federally-regulated consumer products, other than hot water dispensers, booster water heaters, and mini-tank electric water heaters, shall be not less than the applicable values shown in Table F-5.

EXCEPTION to Section 1605.1(f)(2): Section 1605.3(f)(2) does not apply to any water heater:

1. that is within the scope of 42 U.S.C. Sections 6292(a)(4) or 6311(1)(F),
2. that has a rated storage volume of less than 20 gallons, and
3. for which there is no federal test method applicable to that type of water heater.

Table F-5
Standards for Small Water Heaters that are Not Federally-Regulated Consumer Products

Appliance	*Energy Source*	*Input Rating*	*Rated Storage Volume (gallons)*	*Minimum Energy Factor*[1]
Storage water heaters	Gas	≤ 75,000 Btu/hr	< 20	0.62 – (.0019 x V)
Storage water heaters	Gas	≤ 75,000 Btu/hr	> 100	0.62 – (.0019 x V)
Storage water heaters	Oil	≤ 105,000 Btu/hr	> 50	0.59 – (.0019 x V)
Storage water heaters	Electricity	≤ 12 kW	> 120	0.93 – (.00132 x V)
Instantaneous Water Heaters	Gas	≤ 50,000 Btu/hr	Any	0.62 – (.0019 x V)
Instantaneous Water Heaters	Gas	≤ 200,000 Btu/hr	≥ 2	0.62 – (.0019 x V)
Instantaneous Water Heaters	Oil	≤ 210,000 Btu/hr	Any	0.59 – (.0019 x V)
Instantaneous Water Heaters	Electricity	≤ 12 kW	Any	0.93 – (.00132 x V)

[1] Volume (V) = rated storage volume in gallons.

(3) **Energy Efficiency Standards for Combination Space-Heating and Water-Heating Appliances.** See Section 1605.3(e)(3) for standards for combination space-heating and water-heating appliances.

(4) **Energy Efficiency Standards for Water Heaters.** See Section 1605.1(f) for standards for water heaters that are federally-regulated consumer products or federally-regulated commercial and industrial equipment.

(5) **Energy Efficiency Standards for Booster Water Heaters.** There is no energy efficiency standard or energy design standard for booster water heaters.

(g) Pool Heaters, Portable Electric Spas, Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.

(1) **Energy Design Standard for Natural Gas Pool Heaters.** Natural gas pool heaters shall not be equipped with constant burning pilots.

(2) **Energy Design Standard for All Pool Heaters.** All pool heaters shall have a readily accessible on-off switch that is mounted on the outside of the heater and that allows shutting off the heater without adjusting the thermostat setting.

(3) **Energy Efficiency Standard for Heat Pump Pool Heaters.** For heat pump pool heaters manufactured on or after March 1, 2003, the average of the coefficient of performance (COP) at Standard Temperature Rating and the coefficient of performance (COP) at Low Temperature Rating shall be not less than 3.5.

(4) **Energy Efficiency Standards for Gas and Oil Pool Heaters.** See Section 1605.1(g) for energy efficiency standards for gas and oil pool heaters that are federally-regulated consumer products.

(5) **Residential Pool Pump and Motor Combinations, and Replacement Residential Pool Pump Motors.**

(A) **Motor Efficiency.** Pool pump motors manufactured on or after January 1, 2006 may not be split-phase or capacitor start – induction run type.

(B) **Two-, Multi-, or Variable-Speed Capability.**

1. **Residential Pool Pump and Motor Combinations.** Pool pump motors with a capacity of 1 HP or more which are manufactured on or after January 1, 2008, shall have the capability of operating at two or more speeds with a low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate. Section 1605.3(g)(5)(B)1. applies to models manufactured prior to January 1, 2010**.**

2. **Residential Pool Pump Motors.** Residential pool pump motors with a pool pump motor capacity of 1 HP or greater which are manufactured on or after January 1, 2010, shall have the capability of operating at two or more speeds with a low speed having a rotation rate that is no more than one-half of the motor's maximum rotation rate. The pump motor must be operated with a pump control that shall have the capability of operating the pump at least at two speeds. Section 1605.3(g)(5)(B)2. applies to models manufactured on or after January 1, 2010.

3. **Pump Controls.** Pool pump motor controls manufactured on or after January 1, 2008 that are sold for use with a two- or more speed pump shall have the capability of operating the pool pump at least at two speeds. The control's default circulation speed setting shall be no more than one-half of the motor's maximum rotation rate. Any high speed override capability shall be for a temporary period not to exceed one 24-hour cycle without resetting to default settings.

(6) **Portable Electric Spas.** The normalized standby power, as defined in Section 1604(g)(2)(I), of portable electric spas manufactured on or after January 1, 2006, shall be not greater than $5(V^{2/3})$ watts where V = the fill volume, in gallons.

(h) Plumbing Fittings.

(1) **Tub Spout Diverters.** The leakage rate of tub spout diverters shall be not greater than the applicable values shown in Table H-2.

Table H-2
Standards for Tub Spout Diverters

Appliance	*Testing Conditions*	*Maximum Leakage Rate*
		Effective March 1, 2003
Tub spout diverters	When new	0.01 gpm
	After 15,000 cycles of diverting	0.05 gpm

(2) **Showerhead-Tub Spout Diverter Combinations.** Showerhead-tub spout diverter combinations shall meet both the standard for showerheads and the standard for tub spout diverters.

(3) **Commercial Pre-rinse Spray Valves.**

(A) Commercial pre-rinse spray valves manufactured on or after January 1, 2006, shall be capable of cleaning 60 plates in an average time of not more than 30 seconds per plate.

(B) See Section 1605.1(h) for water consumption standards for commercial pre-rinse spray valves.

(4) **Other Plumbing Fittings.** See Section 1605.1(h) for energy efficiency standards for plumbing fittings that are federally-regulated consumer products.

(i) Plumbing Fixtures.

See Section 1605.1(i) for water efficiency standards for plumbing fixtures that are federally-regulated consumer products.

(j) Fluorescent Lamp Ballasts.

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

(k) Lamps.

(1) **Energy Efficiency Standards for State-Regulated General Service Incandescent Lamps.** The lamp electrical power input of state-regulated general service incandescent lamps manufactured on or after the effective dates shown in Table K-7, shall be no greater than the applicable values shown in Table K-7.

Table K-7
Standards for State-Regulated General Service Incandescent Lamps

Frost or Clear		
	Maximum Power Use (watts)	
Lumens (L)	*January 1, 2006*	*January 1, 2008*
L < 340	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 21
340 ≤ L < 562	(0.0500 * Lumens) + 21	38
562 ≤ L < 610	(0.0500 * Lumens) + 21	(0.2400 * Lumens) – 97
610 ≤ L < 760	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 19
760 ≤ L < 950	(0.0500 * Lumens) + 21	57
950 ≤ L < 1013	(0.0500 * Lumens) + 21	(0.2000 * Lumens) – 133
1013 ≤ L < 1040	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 19
1040 ≤ L < 1300	(0.0500 * Lumens) + 21	71
1300 ≤ L < 1359	(0.0500 * Lumens) + 21	(0.2700 * Lumens) – 280
1359 ≤ L < 1520	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 19
1520 ≤ L < 1850	(0.0500 * Lumens) + 21	95
1850 ≤ L < 1900	(0.0500 * Lumens) + 21	(0.4200 * Lumens) - 682
L ≥ 1900	(0.0500 * Lumens) + 21	(0.0500 * Lumens) + 21
Soft White		
	Maximum Power Use (watts)	
Lumens (L)	*January 1, 2006*	*January 1, 2008*
L < 310	(0.0500 * Lumens) + 22.5	(0.0500 * Lumens) + 22.5
310 ≤ L < 514	(0.0500 * Lumens) + 22.5	38
514 ≤ L < 562	(0.0500 * Lumens) + 22.5	(0.2200 * Lumens) – 75
562 ≤ L < 730	(0.0500 * Lumens) + 22.5	(0.0500 * Lumens) + 20.5
730 ≤ L < 909	(0.0500 * Lumens) + 22.5	57
909 ≤ L < 963	(0.0500 * Lumens) + 22.5	(0.2200 * Lumens) – 143
963 ≤ L < 1010	(0.0500 * Lumens) + 22.5	(0.0500 * Lumens) + 20.5
1010 ≤ L < 1250	(0.0500 * Lumens) + 22.5	71
1250 ≤ L < 1310	(0.0500 * Lumens) + 22.5	(0.2500 * Lumens) – 241.5
1310 ≤ L < 1490	(0.0500 * Lumens) + 22.5	(0.0500 * Lumens) + 20.5
1490 ≤ L < 1800	(0.0500 * Lumens) + 22.5	95
1800 ≤ L < 1850	(0.0500 * Lumens) + 22.5	(0.4000 * Lumens) – 625
L ≥ 1850	(0.0500 * Lumens) + 22.5	(0.0500 * Lumens) + 22.5

(2) **State-Regulated Incandescent Reflector Lamps.**

The average lamp efficacy of state-regulated incandescent reflector lamps manufactured on or after January 1, 2008 shall be not less than the applicable values shown in Table K-8.

Table K-8
Standards for State-Regulated Incandescent Reflector Lamps

Rated Lamp Wattage	Minimum Average Lamp Efficacy (LPW)
40-50	10.5
51-66	11.0
67-85	12.5
86-115	14.0
116-155	14.5
156-205	15.0

EXCEPTIONS to Section 1605.3(k)(2): Section 1605.3(k)(2) does not apply to the following incandescent reflector lamps.

1. ≤ 45 watt R-20 (reflector, 2.5″ diameter)
2. ≤ 50 watt ER-30 (ellipsoidal reflector,3.75″ diameter)
3. ≤ 50 watt ER-40 (ellipsoidal reflector,5.00″ diameter)
4. 65 watt ER-40 (ellipsoidal reflector,5.00″ diameter)
5. ≤ 50 watt BR-30 (bulge reflector, 3.75″ diameter)
6. ≤ 50 watt BR-40 (bulge reflector, 5.00″ diameter)
7. 65 watt BR-30 (bulge reflector, 3.75″ diameter)
8. 65 watt BR-40 (bulge reflector, 5.00″ diameter)

(3) **Standards for State-Regulated General Service Incandescent Lamps, General Service Lamps, and Modified Spectrum Incandescent Lamps.** The energy consumption rate of state-regulated general service incandescent lamps, general service lamps, and modified spectrum general service incandescent lamps manufactured on or after the effective dates shown in Tables K-9, K-10, and K-11 shall meet the standards shown in Tables K-9, K-10, and K-11.

Table K-9
Standards for State-Regulated General Service Incandescent Lamps -Tier I

Rated Lumen Ranges	*Maximum Rated Wattage*	*Minimum Rated Lifetime*	*Proposed California Effective Date*
1490-2600 Lumens	72 watts	1,000 Hours	Jan, 1, 2011
1050-1489 Lumens	53 watts	1,000 Hours	Jan 1, 2012
750-1049 Lumens	43 watts	1,000 Hours	Jan 1, 2013
310-749 Lumens	29 watts	1,000 Hours	Jan 1, 2013

Table K-10
Standards for State-Regulated General Service Lamps -Tier II

Lumen Ranges	*Minimum Lamp Efficacy*	*Minimum Rated Lifetime*	*Proposed California Effective Date*
All	45 lumens per watt	1,000 Hours	Jan, 1, 2018

(A) These standards apply to each lamp that:

1. is intended for a general service or general illumination application (whether incandescent or not);
2. has a medium screw base or any screw base not defined in ANSI C81.61-2006;
3. is capable of being operated at a voltage at least partially within the range of 110 to 130 volts; and
4. is manufactured or imported after December 31, 2010.

(B) Each lamp described in Section 1605.3(k)(3)(A) shall have a color rendering index that is greater than or equal to:

1. 80 for nonmodified spectrum lamps; or
2. 75 for modified spectrum lamps.

Table K-11
Standards for State-Regulated Modified Spectrum General Service Incandescent Lamps -Tier I

Rated Lumen Ranges	*Maximum Rated Wattage*	*Minimum Rated Lifetime*	*Proposed California Effective Date*
1118-1950 Lumens	72 watts	1,000 Hours	Jan 1, 2011
788-1117 Lumens	53 watts	1,000 Hours	Jan 1, 2012
563-787 Lumens	43 watts	1,000 Hours	Jan 1, 2013
232-562 Lumens	29 watts	1,000 Hours	Jan 1, 2013

(4) **GU-24 Base Lamps.** GU-24 base lamps shall not be incandescent lamps.

(5) See Section 1605.1(k) for energy efficiency standards for federally-regulated lamps.

(l) Emergency Lighting and Self-Contained Lighting Controls.

(1) **Illuminated Exit Signs.** See Section 1605.1(l) for energy efficiency standards for illuminated exit signs.

(2) **Self Contained Lighting Controls** manufactured on or after February 1, 2013.

(A) **All Self-Contained Lighting Controls.**

1. The manufacturer shall provide instructions for installation and start-up calibration of all self-contained lighting control devices.
2. If indicator lights are integral to a self-contained lighting control system, such indicator lights shall consume no more than 1 watt of power per indicator light.

(B) **Automatic Time-Switch Controls.**

1. Residential automatic time-switch controls labeled for use with lighting shall have program backup capabilities that prevent the loss of the device's schedule for at least 7 days, and the device's date and time for at least 72 hours if power is interrupted.

2. Commercial automatic time-switch controls labeled for use with lighting shall:
   a. have program backup capabilities that prevent the loss of the device's schedule for at least 7 days, and the device's date and time for at least 72 hours if power is interrupted;
   b. be capable of providing manual override to each connected load and shall resume normally scheduled operation after manual override is initiated within 2 hours for each connected load; and
   c. incorporate an automatic holiday shutoff feature that turns off all connected loads for at least 24 hours and then resumes normally scheduled operation.

(C) **Astronomical Time-Switch Controls.** Astronomical time-switch controls shall:

1. meet the requirements of an automatic time-switch control;
2. have sunrise and sunset prediction accuracy within plus-or-minus 15 minutes and timekeeping accuracy within 5 minutes per year;
3. be capable of displaying date, current time, sunrise time, sunset time, and switching times for each step during programming;
4. have an automatic daylight savings time adjustment; and
5. have the ability to independently offset the on and off for each channel by at least 99 minutes before and after sunrise or sunset.

(D) **Automatic Daylight Controls.** Automatic daylight controls shall:

1. be capable of reducing the power consumption in response to measured daylight either directly or by sending and receiving signals;
2. comply with Section 1605.3(l)(2)(F) of this Article if the daylight control is capable of directly dimming lamps;
3. automatically return to its most recent time delay settings within 60 minutes when put in calibration mode;
4. have a set point control that easily distinguishes settings to within 10 percent of full scale adjustment;
5. have a light sensor that has a linear response within 5 percent accuracy over the range of illuminance measured by the light sensor;
6. have a light sensor that is physically separated from where the calibration adjustments are made, or is capable of being calibrated in a manner that the person initiating the calibration is remote from the sensor during calibration to avoid influencing calibration accuracy; and
7. comply with Section 1605.3(l)(2)(E) of this Article if the device contains a photo control component.

(E) **Photo Controls.**

1. A photo control shall not have a mechanical device that permits disabling of the control.

(F) **Dimmer Controls.**

1. All dimmer controls shall:

a. be capable of reducing power consumption by a minimum of 65 percent when the dimmer is at its lowest level;

b. include an off position which produces a zero lumen output; and

c. not consume more than 1 watt per lighting dimmer switch leg when in the off position.

2. Dimmer controls that can directly control lamps shall provide electrical outputs to lamps for reduced flicker operation through the dimming range so that the light output has an amplitude modulation of less than 30 percent for frequencies less than 200 Hz without causing premature lamp failure.

3. Wall box dimmers and associated switches designed for use in three way circuits shall be capable of turning lights off, and to the level set by the dimmer if the lights are off.

(G) **Occupant sensing devices.**

1. All occupant sensing devices shall:

a. be capable of automatically turning off controlled lights in an area no more than 30 minutes after the area has been vacated;

b. allow all lights to be manually turned off regardless of the status of occupancy; and

c. have a visible status signal that indicates that the device is operating properly, or that it has failed or malfunctioned. The visible status signal may have an override switch that turns off the signal.

2. All occupant sensing devices that utilize ultrasonic radiation for detection of occupants shall:

a. comply with 21 CFR 1002.12 (2011); and

b. emit no audible sound, and shall not emit ultrasound in excess of the decibel levels shown in Table L-1 measured no more than five feet from the source, on axis.

TABLE L-1
Ultrasound Maximum Decibel Values

Mid-frequency of Sound Pressure Third-Octave Band (in kHz)	*Maximum db Level within third-Octave Band (in dB reference 20 micropascals)*
Less than 20	80
20 or more to less than 25	105
25 or more to less than 31.5	110
31.5 or more	115

3. All occupant sensing devices that utilize microwave radiation for detection of occupants shall:

a. comply with 47 CFR Parts 2 and 15 (2011); and

b. not emit radiation in excess of 1 milliwatt per square centimeter measured at no more than 5 centimeters from the emission surface of the device.

4. Occupant sensing devices incorporating dimming shall comply with the requirements for dimmer controls in Section 1605.3(l)(2)(F) of this Article.

5. Motion sensors shall be rated for outdoor use as specified by the National Electric Code 2002, Section 410.4(A).

6. "Partial off" shall have dimming functionality or shall incorporate the following functionalities:

   a. have two poles;

   b. have one pole that is manual-on and manual-off; and

   c. have one pole that is automatic-on and automatic-off and shall not be capable of conversion by the user to manual-on only functionality.

7. "Partial on" shall have dimming functionality or shall incorporate the following functionalities:

   a. have two poles each with automatic-off functionality;

   b. have one pole that is manual-on and shall not incorporate DIP switches, or other manual means, for conversion between manual and automatic functionality; and

   c. have one pole that is automatic-on and shall not be capable of conversion by the user to manual-on functionality.

8. Vacancy sensors shall:

   a. not turn on lighting automatically and shall not incorporate DIP switches, or other manual means, for conversion between manual and automatic functionality;

   b. have a grace period of no more than 30 seconds and no less than 15 seconds to turn on lighting automatically after the sensor has timed out; and

   c. not have an override switch that disables the sensor.

(m) Traffic Signal Modules and Traffic Signal Lamps.

(1) **Traffic Signal Modules for Pedestrian Control.** The power consumption of traffic signal modules for pedestrian control manufactured on or after January 1, 2006 shall be not greater than the applicable values shown in Table M-2 when tested at the temperatures shown.

Table M-2
Standards for Traffic Signal Modules for Pedestrian Control
Sold or Offered for Sale in California

Type	*at 25°C (77°F)*	*At 74°C (165.2°F)*
Hand or 'Don't Walk' sign or countdown.	10 watts	12 watts

Walking Person or 'Walk' sign	9 watts	12 watts

(2) See Section 1605.1(m) for energy efficiency standards for federally regulated traffic signal modules for vehicle control and federally regulated traffic signal modules for pedestrian control.

(n) Luminaires and Torchieres.

(1) **Metal Halide Luminaires.** Metal halide luminaires, manufactured on or after the effective dates shown in N-1, and manufactured before January 1, 2009, shall meet the requirements shown in Table N-1.

Table N-1
Standards for Metal Halide Luminaires Manufactured Before January 1, 2009

Lamp Position	*Lamp Rating*	*Effective Date*	*Requirements*
Vertical (base-up)	150-500 watts	Jan. 1, 2006	Luminaires shall not contain a probe-start metal halide ballast.
Vertical (base-down)	150-500 watts	Jan 1, 2008	Luminaires shall not contain a probe-start metal halide ballast.
All	150-500 watts	Jan 1, 2008	Luminaires shall not contain a probe-start metal halide ballast.
All	150-500 watts	Jan 1, 2008	Luminaires with metal halide lamps shall contain metal halide ballasts with a minimum ballast efficiency of 88 percent. Exceptions: 1. Luminaires that use electronic ballasts that operate at 480 volts; or 2. Luminaires that meet all of the following criteria: a. rated only for 150 watt lamps; and b. rated for use in wet locations as specified by the National Electrical Code 2002, Section 410.4(A); and c. contain a ballast that is rated to operate at ambient air temperatures above 50^0 C as specified by UL 1029-2001.

Notes: Luminaires are covered if they are capable of operating lamps within the range of included lamp wattages. Vertical includes products rated only for use within 15° of vertical.

(2) **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)(2)(A) as applicable:

(A) The requirements for metal halide luminaires are as follows:

1. Indoor metal halide luminaires manufactured on or after January 1, 2010 shall comply with at least one compliance option of Section 1605.3(n)(2)(B).

2. Indoor metal halide luminaires manufactured on or after January 1, 2015 shall comply with Section 1605.3(n)(2)(B)4, and shall also comply with at least one other compliance option of Section 1605.3(n)(2)(B).
3. Outdoor metal halide luminaires manufactured on or after January 1, 2010, may comply with Section 1605.3(n)(2)(B)3, and shall comply with at least one other compliance option of Section 1605.3(n)(2)(B).

(B) Metal halide luminaires shall meet one of the following compliance options:

1. A minimum ballast efficiency of:
   a. 90 percent for 150 to 250 watt lamps; or
   b. 92 percent for 251 to 500 watt lamps.
2. A minimum ballast efficiency of 88 percent and an occupant sensor which is an integral control as defined in Section 1602(n) of this Article, shipped with the factory default setting to automatically reduce lamp power through dimming by a minimum of 40 percent within 30 minutes or less after an area has been vacated;
3. A minimum ballast efficiency of 88 percent and an automatic daylight control which is an integral control as defined in Section 1602(n) of this Article, shipped with the factory default setting to automatically reduce lamp power through dimming by a minimum of 40 percent;
4. A minimum ballast efficiency of 88 percent and a relamping rated wattage within only one of the four wattage bins specified in subsections (i) through(iv) below. The luminaire shall be able to operate lamps within only one of the four wattage bins and shall not be rated for any lamp wattage outside of that wattage bin. The luminaire shall have a permanent, pre-printed factory-installed label that states the relamping rated wattage.
   a. 150-160 watts; or
   b. 200-215 watts; or
   c. 290-335 watts
   d. 336-500 watts, provided that when a luminaire is able to operate 336 to 500 watt lamps, the luminaire shall be prepackaged and sold together with at least one lamp per socket, having a minimum lamp mean efficacy of 80 lumens per watt based on published mean lumens and rated lamp power (watts).

EXCEPTIONS to Sections 1605.3(n)(2):

The following metal halide lighting systems shall not have probe-start ballasts and are not required to meet the minimum ballast efficiency requirements:

1. Luminaires that use regulated lag ballasts;
2. Luminaires that use electronic ballasts which operate at 480 volts; or
3. Luminaires that meet all three of the following requirements:
   a. Are rated for use only with 150 watt lamps, and
   b. Are rated for use in wet locations, as specified by the National Electrical Code 2002, Section 410.4(A); and

c. Contain a ballast that is rated to operate at ambient air temperatures above 50 degrees C, as specified by UL 1029-2001.

(3) **Energy Efficiency Standards for Under-Cabinet Luminaires.** Under-cabinet luminaires that are equipped with T-8 fluorescent lamps and that are designed to be attached to office furniture and that are manufactured on or after January 1, 2006 shall be equipped with ballasts that have a ballast efficacy factor not less than the applicable values shown in Table N-2.

Under-cabinet luminaires that are equipped with GU-24 sockets manufactured on or after January 1, 2010 shall not be rated for use with incandescent lamps of any type, including line voltage or low voltage.

EXCEPTION 1 to Section 1605.3(n)(3):

Section 1605.3(n)(3) does not apply to luminaires equipped with T-8 ballasts designed for dimming.

EXCEPTION 2 to Section 1605.3(n)(3):

Section 1605.3(n)(3) does not apply to luminaires that are:

1. specifically and exclusively designed for use in applications where electromagnetic interference from electronic ballasts would interfere with critical, sensitive instrumentation and equipment such as medical imaging devices; and
2. clearly, legibly, and permanently labeled, in at least 12 point type and in a place likely to be seen by the purchaser and the installer, "This 'luminaire' or 'fixture' is intended exclusively for use in applications where critical, sensitive equipment would be adversely affected by electronic lamp ballast electromagnetic radiation".

Table N-2
Standards for Under-Cabinet Luminaires

Lamp Length (inches)	*Minimum Ballast Efficacy Factor (BEF) for one lamp*	*Minimum Ballast Efficacy Factor (BEF) for two lamps*
≤29	4.70	2.80
>29 and ≤35	3.95	2.30
>35 and ≤41	3.40	1.90
>41 and ≤47	3.05	1.65
>47	2.80	1.45

(4) **Portable Luminaires.**

(A) Portable luminaires manufactured on or after January 1, 2010 shall meet one or more of the following requirements:

1. Be equipped with a dedicated fluorescent lamp socket connected to a high frequency electronic ballast contained within the portable luminaire;
2. Be equipped with one or more GU-24 line-voltage sockets and not rated for use with incandescent lamps of any type, including line voltage or low voltage;

3. Be an LED luminaire or a portable luminaire with an LED light engine with integral heat sink, and comply with the minimum requirements shown in Table N-3;

Table N-3
Minimum Requirements for Portable LED Luminaires, and Portable Luminaires with LED Light Engines with Integral Heat Sink

Criteria	*Requirement*
Light Output	≥ 200 lumens (initial)
Minimum LED Luminaire Efficacy	29 lumens/W
Minimum LED Light Engine Efficacy	40 lumens/W
Color Correlated Temperature (CCT)	2700 K through 5000 K
Minimum Color Rendering Index (CRI)	75
Power Factor (for luminaires labeled or sold for residential use)	≥ 0.70

4. Be equipped with an E12, E17, or E26 screw-based socket and be prepackaged and sold together with one screw-based compact fluorescent lamp or screw-based LED lamp for each screw-based socket on the portable luminaire. The compact fluorescent or LED lamps which are prepackaged with the portable luminaire shall be fully compatible with the luminaire controls, meaning that portable luminaires having a dimmer control shall be prepackaged with dimmable compact fluorescent or LED lamps, and portable luminaires having 3-way controls shall be prepackaged with 3-way compact fluorescent or LED lamps. The compact fluorescent lamps which are prepackaged with the luminaires shall also meet the minimum energy efficiency levels established by ENERGY STAR® for compact fluorescent lamps in effect on December 31, 2008. The LED lamps required to be packaged with the luminaire shall comply with the minimum requirements shown in Table N-3;
5. Be equipped with one or more single-ended, non-screw based halogen lamp sockets (line or low voltage), a dimmer control or high low control, and be rated for a maximum of 100W.

EXCEPTIONS to Section 1605.3(n)(4). The following portable luminaires are not required to be prepackaged and sold together with compact fluorescent or LED lamps:

1. Portable Wall Mount Adjustable Luminaires that meet all of the following requirements: Designed only to be mounted on a wall, having no base which will allow the luminaire to stand on a horizontal surface, having an articulated arm, having a maximum overall length of 24 inches in any direction, fitted only with a single E-12, E-17 or E-26 lamp socket per luminaire, and controlled with an integral dimmer. Luminaires manufactured on or before December 31, 2011 shall have a maximum relamping rated wattage of 57 watts, and luminaires manufactured on or after January 1, 2012 shall have a maximum relamping rated wattage of 43 watts, as listed on a permanent pre-printed factory-installed label in accordance with Underwriters Laboratories (UL) 153.
2. Art Work Luminaires that meet all of the following requirements: Designed only to be mounted directly to art work only for the purpose of

illuminating that art work, fitted only with E-12 screw-base line-voltage sockets, having no more than three sockets per luminaire, and controlled with an integral high/low switch. Luminaires with a single socket shall have a maximum relamping rated wattage of 25 watts, and luminaires with two or three sockets shall have a maximum relamping rated wattage of 15 watts per socket, as listed on a permanent pre-printed factory-installed label in accordance with Underwriters Laboratories (UL) 153.

(B) Portable luminaires that have internal power supplies shall have zero standby power when the luminaire is turned off.

(5) **GU-24 Adaptors.** GU-24 adaptors manufactured on or after January 1, 2010 shall not adapt a GU-24 socket to any other line voltage socket.

(6) See Section 1605.1(n) for energy efficiency standards for federally regulated metal halide lamp fixtures manufactured on or after January 1, 2009, and torchieres.

(o) Dishwashers.

See Section 1605.1(o) for energy efficiency standards for dishwashers that are federally-regulated consumer products.

(p) Clothes Washers.

(1) **Commercial Clothes Washers.** See Section 1605.1(p) for energy efficiency standards and water efficiency standards for commercial clothes washers.

(2) **Other Clothes Washers.** See Sections 1605.1(p) and 1605.2(p) for energy efficiency standards and energy design standards for clothes washers that are federally-regulated consumer products.

(q) Clothes Dryers.

See Section 1605.1(q) for energy efficiency standards and energy design standards for clothes dryers that are federally-regulated consumer products.

(r) Cooking Products and Food Service Equipment.

(1) **Energy Standards for Food Service Equipment.** There is no energy efficiency standard or energy design standard for food service equipment other than commercial hot food holding cabinets.

(2) **Energy Efficiency Standards for Commercial Hot Food Holding Cabinets.** The idle energy rate of commercial hot food holding cabinets manufactured on or after January 1, 2006 shall be no greater than 40 watts per cubic foot of measured interior volume.

(3) **Cooking Products.** See Section 1605.1(r) for the energy design standard for cooking products that are federally-regulated consumer products.

(s) Electric Motors.

See Section 1605.1(s) for energy efficiency standards for electric motors that are federally-regulated commercial and industrial equipment.

(t) Distribution Transformers.

See Section 1605.1(t) for energy efficiency standards for low-voltage dry-type distribution transformers, liquid-immersed distribution transformers, and medium-voltage dry-type distribution transformers.

(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 when tested at 115 volts at 60 Hz, manufactured on or after the effective dates shown shall be not greater than the applicable values shown in Table U-2 and Table U-3.

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 and Table U-3 until five years after the effective dates indicated in Table U-2 and Table U-3.

Table U-2
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.

Nameplate Output	***Minimum Efficiency in Active Mode***
0 to < 1 watt	0.49 * Nameplate Output
≥ 1 and ≤ 49 watts	0.09 * Ln(Nameplate Output) + 0.49
> 49 watts	0.84
	Maximum Energy Consumption in No-Load Mode
0 to <10 watts	0.5 watts
≥ 10 to ≤ 250 watts	0.75 watts
Where Ln (Nameplate Output) = Natural Logarithm of the nameplate output expressed in watts.	

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

Nameplate Output	*Minimum Efficiency in Active Mode*
<1 watt	0.5 * Nameplate Output
≥ 1 and ≤ 51 watts	0.09*Ln(Nameplate Output) + 0.5

> 51 watts	0.85
	Maximum Energy Consumption in No-Load Mode
Any output	0.5 watts
Where Ln (Nameplate Output) = Natural Logarithm of the nameplate output expressed in watts.	

(v) Televisions, and Consumer Audio and Video Equipment.

(1) **Consumer Audio and Video Equipment.** The power usage of consumer audio and video equipment manufactured on or after the effective dates shown shall be not greater than the applicable values in Table V-1. For equipment that consists of more than one individually powered product, each with a separate main plug, the individually powered products shall each have a power usage not greater than the applicable values shown in Table V-1.

Table V-1
Standards for Consumer Audio and Video Equipment

Appliance Type	*Effective Date*	*Maximum Power Usage (Watts)*
Compact Audio Products	January 1, 2007	2 W in Audio standby-passive mode for those without a permanently illuminated clock display 4 W in Audio standby-passive mode for those with a permanently illuminated clock display
Digital Versatile Disc Players and Digital Versatile Disc Recorders	January 1, 2006	3 W in Video standby-passive mode

(2) **Televisions.** All televisions manufactured on or after the effective dates shall meet the requirements shown in Table V-2.

(3) In addition, televisions manufactured on or after January 1, 2011 shall meet the requirements shown in Sections 1605.3(v)(3)(A) and 1605.3(v)(3)(B) and 1605.3(v)(3)(C) of this Article.

(A) A television shall automatically enter TV standby-passive mode or standby-active mode after a maximum of 15 minutes without video and/or audio input on the selected input mode.

(B) A television shall enter TV standby-passive mode when turned off by remote or integrated button/switch.

(C) The peak luminance of the product in "home" mode, or in the default mode as shipped, shall not be less than 65% of the peak luminance of the "retail" mode, or the brightest selectable preset mode, of the product.

Table V-2
Standards for Televisions

Effective Date	*Screen Size (area A in square inches)*	*Maximum TV Standby-passive Mode Power Usage (watts)*	*Maximum On Mode Power Usage (P in Watts)*	*Minimum Power Factor for (P ≥ 100W)*
January 1,	All	3 W	No standard	No standard

2006				
January 1, 2011*	A < 1400	1 W	P ≤ 0.20 x A + 32	0.9
January 1, 2013	A < 1400	1 W	P ≤ 0.12 x A + 25	0.9

(W) Battery Charger Systems.

(1) **Energy Efficiency Standards for Large Battery Charger Systems**. Large battery charger systems manufactured on or after January 1, 2014, shall meet the applicable performance values in Table W-1.

Table W-1
Standards for Large Battery Charger Systems

Performance Parameter		***Standard***
Charge Return Factor (CRF)	100 percent, 80 percent Depth of discharge	CRF≤ 1.10
	40 percent Depth of discharge	CRF ≤ 1.15
Power Conversion Efficiency		Greater than or equal to: 89 percent
Power Factor		Greater than or equal to: 0.90
Maintenance Mode Power (E_b = battery capacity of tested battery)		Less than or equal to: 10 + 0.0012E_b W
No Battery Mode Power		Less than or equal to: 10 W

(2) **Energy Efficiency Standards for Small Battery Charger Systems.** Except as provided in 1605.3(w)(3), 1605.3(w)(4), and 1605.3(w)(2)(D), the following small battery charger systems shall meet the applicable performance values in Table W-2:

(A) consumer products that are not USB charger systems with a battery capacity of 20 watt-hours or more~~,~~ and are manufactured on or after February 1, 2013

(B) consumer products that are USB charger systems with a battery capacity of 20 watt-hours or more and are manufactured on or after January 1, 2014; and

(C) those that are not consumer products and are manufactured on or after January 1, 2017.

(D) An à la carte charger that satisfies the following criteria shall not be required to meet any otherwise applicable standards in Section 1605.3(w)(2) or Table W-2:

i. provided separately from and subsequent to the sale of small battery charger system manufactured before the effective date of the applicable standard in Section 1605.3(w)(2);

ii. necessary as a replacement for, or as a replacement component of, such small battery charger system;

iii. is provided by a manufacturer directly to a consumer or to a service or repair facility; and

iv. is manufactured no more than five years after the effective date in Section 1605.3(w)(2) applicable to the particular small battery charger system for

which the à la carte charger is intended as a replacement or replacement component,

Table W-2
Standards for Small Battery Charger Systems

Performance Parameter	*Standard*
Maximum 24 hour charge and maintenance energy (Wh) (E_b = capacity of all batteries in ports and N = number of charger ports)	For E_b of 2.5 Wh or less: 16 × N
	For E_b greater than 2.5 Wh and less than or equal to 100 Wh: 12 x N +1.6E_b
	For E_b greater than 100 Wh and less than or equal to 1000 Wh: 22 x N+1.5E_b
	For E_b greater than 1000 Wh: 36.4 x N +1.486E_b
Maintenance Mode Power and No Battery Mode Power (W) (E_b = capacity of all batteries in ports and N = number of charger ports)	The sum of maintenance mode power and no battery mode power must be less than or equal to: 1x N+0.0021xE_b

(3) **Inductive Charger Systems.** Inductive charger systems manufactured on or after February 1, 2013, shall meet either the applicable performance standards in Table W-2 or shall use less than 1 watt in maintenance mode, less than 1 watt in no battery mode, and an average of 1 watt or less over the duration of the charge and maintenance mode test.

(4) **Battery Backup and Uninterruptible Power Supplies.** Battery backup and uninterruptible power supplies manufactured on or after February 1, 2013, for consumer products and January 1, 2017, for products that are not consumer products shall consume no more than 0.8+0.0021 x E_b watts in maintenance mode where E_b is the battery capacity in watt-hours.

The following standards are incorporated by reference in Section 1605.3.

Number **Title**

FEDERAL REQUIREMENTS

ENERGY STAR® Program Requirements for CFLs

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

Copies available from: Superintendent of Documents

U.S. Government Printing Office
Washington, DC 20402
www.access.gpo.gov/nara/cfr

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C81.61-2006	Specifications for Electric Bases
Copies available from:	American National Standards Institute 1819 L Street, NW, 6th Floor Washington, DC 20036 www.ansi.org Phone: (202) 293-8020 FAX: (202) 293-9287

ILLUMINATING ENGINGEERING SOCIETY OF NORTH AMERICA (IESNA)

IESNA LM-79-08	Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products
Copies available from:	Illuminating Engineering Society of North America 120 Wall Street, 17th Floor New York, NY 10005-4001 www.iesna.org Phone: (212) 248-5000 FAX: (212) 248-5017/18

NATIONAL ELECTRIC CODE (NEC)

ANSI/NFPA 70 2002	National Electrical Code 2002
Copies available from:	National Fire Protection Agency 1 Batterymarch Park Quincy, MA 02169-7471 www.nfpa.org Phone: (617) 770-3000 FAX: (617) 770-0700

UNDERWRITERS LABS (UL)

UL 153	Portable Luminaires
UL 1029-2001	Standard for High-Intensity-Discharge Lamp Ballasts
Copies available from:	Underwriters Laboratories, Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com Phone: (847) 272-8800 FAX: (847) 272-8129

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

(a) Filing of Statements.

Each manufacturer shall file with the Executive Director a statement for each appliance that is sold or offered for sale in California. The statement shall contain all of the information described in paragraphs (2) through (4) of this subsection and shall meet all of the requirements of paragraph (1) of this subsection and all other applicable requirements in this Article. For models that are in the active database before November 27, 2002, no information needs to be submitted until (i) any of the characteristics in Table X is changed or (ii) the model is discontinued.

The effective dates of this section shall be the same as the effective dates shown in Section 1605.1, 1605.2 or 1605.3 for appliances for which there is an energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3. For appliances with no energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3, the effective date of this section shall be one year after they are added to Section 1601 of this Article, unless a different effective date is specified.

EXCEPTIONS to Section 1606(a). Section 1606(a) is not applicable to:

1. non-commercial cooking products until, as determined by the Executive Director, there takes effect a federal standard or a federal reporting requirement for annual cooking energy consumption or for a similar measure of energy performance, and
2. power supplies, and
3. refrigerators without doors and freezers without doors that are not specifically designed for display and sale of bottled or canned beverages, and
4. walk-in coolers and walk-in freezers, and
5. low-profile ceiling fans.

(1) **General Rules.**

(A) **Format and Categories.** Each statement shall be in a format (including but not limited to computer formats) and in categories specified by the Executive Director.

(B) **When Different Statements are Required.** The Executive Director may establish, modify, and enforce schedules for the submittal of statements where it is reasonably necessary for orderly processing of submittals, for example when manufacturers or third parties often submit many statements simultaneously.

(C) **Asterisks in Model Numbers.** In filing any statement, the manufacturer may use asterisks as a substitute for letters, numbers, blanks, or other characters in the model number, provided that an asterisk (i) shall be used only for a part of the model number that does not indicate energy consumption, energy efficiency, water consumption, or water efficiency, or a design or feature affecting such efficiency or consumption; (ii) shall represent a single letter, number, blank, or other character at the asterisk's location in the model number; and (iii) shall not be used for any of the first four letters, numbers, blanks, or other characters in the model number.

(D) **Different Functions.** Except as provided in Section 1606(a)(1)(G), if the same appliance is sold or offered for sale as more than one type of appliance shown in Table X (for example, if the appliance can serve both water heating and pool heating functions), the manufacturer shall submit a separate statement for each appliance type. Each appliance type for which a statement is submitted must match all the common identifiers shown in Table X.

(E) **Multiple Statements.** A manufacturer may file statements for more than one appliance in a single submittal to the Executive Director. If a submittal contains statements for more than one appliance, there shall be only one statement for each appliance, except as provided in Sections 1606(a)(1)(D) and 1606(a)(1)(G). The Executive Director shall allow multiple statements to be submitted on the same sheet of paper or in the same electronic file under conditions she or he determines are reasonably necessary to ensure accuracy and compatibility with the database.

(F) **Split System Central Air Conditioners.** The statement for split system air conditioners shall be for the combination of the compressor-containing unit and the non-compressor-containing unit most likely to represent the highest national sales volume, consistent with Section 1604(c)(3).

(G) **Combination Space-Heating and Water-Heating Appliances.** Manufacturers of combination space-heating and water-heating appliances shall file two statements for each such appliance. The first statement shall contain the information listed in Table X for combination space-heating and water-heating appliances, and all other information shown in Table X for "all appliances;" and the second statement shall contain the information listed in Table X for the primary function of the appliance according to the determination required by Sections 1605(e) and 1605(f), and containing all other information shown in Table X for "all appliances." Each appliance type for which a statement is submitted must match all the common identifiers shown in Table X.

(2) **Manufacturer Information.**

(A) The name, address, telephone number, and, if available, fax number, URL (web site) address, and e-mail address of the manufacturer; provided, however, that if a parent entity is filing on behalf of a subsidiary entity, if a subsidiary entity is filing on behalf of a parent entity, or if an affiliate entity is filing on behalf of an affiliate entity, then each entity shall be clearly identified and the information shall be provided for both entities.

(B) The name, address, telephone number, and, if available, fax number and e-mail address of the individual to contact concerning the statement pursuant to Section 1606(a)(4). There shall be only one individual to contact for each category (box) in the "Appliance" column of Table X, except that the individual may, during his or her absence, delegate his or her duties in this regard.

(C) The name, address, telephone number, and, if available, fax number and e-mail address of the person signing the declaration pursuant to Section 1606(a)(4).

(3) **Testing and Performance Information.**

(A) A statement that the appliance has been tested in accordance with all applicable requirements of Sections 1603 and 1604. If Section 1604 provides more than one test method that may be used, the manufacturer shall identify which method was used.

(B) The name and address and, if available, telephone number, fax number, URL (web site) address, and e-mail address of the laboratory or other institution where the testing required by Sections 1603 and 1604 was performed.

(C) For commercial refrigerators, commercial refrigerator-freezers, commercial freezers, large storage water heaters, and plumbing fittings, the test reports upon which the manufacturer relies in filing information pursuant to paragraph (D) immediately below.

(D) The applicable information listed in Table X; provided, however, that submittal of information marked with "[1]" is voluntary for federally regulated appliances, and that submittal of information marked with "[2]" is voluntary for state-regulated appliances. Where there is text in the "Permissible Answers" column, the information provided must be one of the answers shown. If the text in the "Permissible Answers" column states "other (specify)," the information provided must be a specific response for the "Required Information" category (e.g., a response of "other" is not acceptable).

EXCEPTION 1. to Section 1606(a)(3)(D):

Section 1606(a)(3)(D) does not apply to any water heater:

1. that is within the scope of 42 U.S.C. Sections 6292(a)(4) or 6311(1)(F),
2. that has a rated storage volume of less than 20 gallons, and
3. for which there is no federal test method applicable to that type of water heater.

EXCEPTION 2. to Section 1606(a)(3)(D):

If an appliance has an alternative test procedure pursuant to Section 1603(c)(1), or an alternative assessment method specified pursuant to Section 1603(c)(2)(A), then the statement shall include:

1. the following information from Table X: Manufacturer's Name, Brand Name, Model Number, and Regulatory Status; and
2. all information from Table X that is applicable to the appliance and that is produced during the alternative test procedure or the alternative assessment method; and
3. all other energy performance information produced during the alternative test procedure or the alternative assessment method.

EXCEPTION 3. to Section 1606(a)(3)(D):

If the Executive Director has specified that there is no test method for an appliance pursuant to Section 1603(c)(2)(B), then the statement shall include the following information from Table X: Manufacturer's Name, Brand Name, Model Number, and Regulatory Status.

EXCEPTION 4 to Section 1606(a)(3)(D):

Before July 1, 2014, manufacturers of large battery charger systems may certify multiple battery charger systems using the testing results of two or more representative battery charger system models, provided that all models so certified are designed to charge batteries of the same chemistry and design. All models certified in this manner must meet the requirements of Section 1606(a)(3)(D), in that untested models must have performance characteristics equal to or better than what is certified. For this reason, the models selected for testing by the manufacturer must be those that the manufacturer expects to have the

lowest performance out of the set to be certified, and manufacturers must report the lowest values generated by the performed tests.

Manufacturers certifying their models using this alternate method shall, as part of the declaration required in Section 1606(a)(4), make a statement under penalty of perjury that all certified models meet all applicable standards and have performance characteristics equal to or better than the reported results.

(E) **How Tested Data Must Be Reported.**

1. For any numerical value required by Table X that is produced by a test specified in Section 1604, the reported value shall be no higher for the value for which the consumer would prefer a high number, and no lower for the value for which the consumer would prefer a low number, than the values obtained by testing; unless different specific instructions are specified in the test method specified in Section 1604.
2. For any numerical value required by Table X that is produced by calculation from measured numerical test results, the reported value shall be no higher for the values where the consumer would prefer a high number than the exact result of the calculation, and no lower than the exact result of the calculation where the consumer would prefer a low number, than the values obtained by calculating, unless different specific instructions are specified in the test method specified in Section 1604.
3. Manufacturers may report:
   a. numbers higher than tested values, where the consumer would, all other things being equal, prefer lower values (or is indifferent); and
   b. numbers lower than tested values, where the consumer would, all other things being equal, prefer higher values (or is indifferent).

Example: An air conditioner is tested using the appropriate test method specified in Section 1604, and the test method does not include specific instructions about the precision of reporting.

- Cooling capacity is measured as: 36,014 Btu per hour.
- For cooling capacity, consumers prefer higher values.
- The manufacturer may not report any value over 36,014 Btu per hour.
- The manufacturer chooses to report 36,000 Btu per hour.

- Electrical energy use is measured at 3,487 watts.
- For electrical energy use, consumers prefer lower values.
- The manufacturer may not report any value under 3,487 watts.
- The manufacturer chooses to report 3,500 watts.

- Using the data the manufacturer chooses to report, EER = 36,000/3,500 = 10.285714.
- For EER, consumers prefer higher values.
- The manufacturer may not report any value of EER over 10.285714 (if EER is reported with only one decimal place, the maximum value would be 10.2).
- The manufacturer chooses to report EER = 10.2 Btu per watt hour.

- If the manufacturer had chosen to report the cooling capacity as 36,014 Btu per hour, and the electrical energy use as 3,487 watts, the calculated EER would have been 36,014/3,487 = 10.328076. In this case the manufacturer could not

report any value of EER over 10.328076 (if EER is reported with only one decimal place, the maximum value would be 10.3).

Table X
Data Submittal Requirements

	Appliance	*Required Information*	*Permissible Answers*
	All Appliances	* Manufacturer's Name	
		* Brand Name	
		* Model Number	
		Regulatory Status	Federally-regulated consumer product, federally-regulated commercial and industrial equipment, non-federally-regulated
A	Non-Commercial Refrigerators, Non-Commercial Refrigerator-Freezers, Non-Commercial Freezers	*Style	Category in Table A-3 (specify)
		*Defrost System	Automatic, manual, partial-automatic
		*Type	Refrigerator, refrigerator-freezer, freezer
		Access[1, 2]	Door, drawer, both door and drawer
		Kitchen Unit[1, 2]	Yes, no
		Internal Freezer[1, 2]	Yes, no
		Wine Chiller	Yes, no
		Chest Refrigerator[1, 2]	Yes, no
		Refrigerator Volume	
		Freezer Volume	
		Total Volume	
		Height	
		Width	
		Depth	
		Annual Energy Consumption (low)	
		Annual Energy Consumption (high)	
		Annual Energy Consumption (mean)	
		Anti-sweat Heater Switch	Yes, no
		Refrigerant Type[1, 2]	Ozone-depleting, non-ozone-depleting
		Insulation Type[1, 2]	Ozone-depleting, non-ozone-depleting

* "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 doors, Self-contained Commercial Refrigerator-Freezers with doors, Self-contained Commercial Freezers with doors, Self-contained Commercial Refrigerators specifically designed for display and sale of bottled or canned beverages without doors	*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; work top table; wine chiller that is not a consumer product.
		*Defrost System	Automatic, manual, partial-automatic
		*Type	Refrigerator, refrigerator-freezer with a single refrigeration system, refrigerator-freezer with two refrigeration systems, refrigerator with self-condensing unit designed for pull-down temperature applications, freezer
		*Door Style	Solid hinged, solid sliding, transparent hinged, transparent sliding, none.
		Refrigerator Volume	
		Freezer Volume	
		Total Volume	
		Height	
		Width	
		Depth	
		Daily Energy Consumption	
		Type of Illumination (reach-in cabinets, pass-through cabinets, roll-in or roll-through cabinets, and wine chillers that are not consumer products only) (for those with transparent doors only)	T-8 fluorescent lamps with electronic ballasts, slim line T-12 fluorescent lamps with electronic ballasts, slim line T-12 fluorescent lamps with magnetic ballasts, incandescent lamps, other, none.
		Efficacy LPW (where Type of Illumination is required and is not T-8 fluorescent lamps with electronic ballasts) (for units manufactured on or after March 31, 2003 only)	
		Illumination Wattage	
		Refrigerant Type	Ozone-depleting, non-ozone-depleting
		Insulation Type	Ozone-depleting, non-ozone-depleting
	Automatic Commercial Ice-Makers	*Equipment Type	Ice-making head, remote-condensing, self-contained, both remote-condensing and remote-compressor
		*Cooling Type	Air, water
		*Type of Ice Harvested	Cube, flake, crushed, other (specify)
		Harvest Rate	
		Energy Consumption	
		Water Consumption	

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Table X Continued - Data Submittal Requirements

	Appliance	*Required Information*	*Permissible Answers*
A	Water Dispensers	*Type	Bottle type; Bottle type with compartment; Pressure type, bubbler; Pressure type with compartment, bubbler; Pressure type, faucet; Pressure type with compartment, faucet, Point-of-Use
		*Condenser Cooling Medium	Air-cooled; Water-cooled
		*Style	Free-standing; Flush-to-Wall; Wall Hung; Wall Hung semi-recessed; Remote; Recessed
		*Refrigerated Compartment	
		Temperatures delivered	Cold only, cook (ambient) and cold, hot and cold
		Cooling Capacity (gallons/hour)	
		Heating Capacity (6-oz. cup per hour)	
		Standby Energy Consumption (kWh/day)	
	Refrigerators without doors not specifically designed for the display and sale of bottled or canned beverages, Freezers without doors, Walk-in Coolers, and Walk-in Freezers	None	
	Refrigerated Bottled or Canned Beverage Vending Machines	Multi-package	Yes, no
		Door Type	Glass front, closed front
		Machine use designation	Indoor, indoor / outdoor
		Daily Energy Consumption at 90° F. Ambient Temperature	
		Daily Energy Consumption at 75° F. Ambient Temperature (for models manufactured on or after January 1, 2006)	
		Type of Illumination	T-8 fluorescent lamps with electronic ballasts, light emitting diodes (LEDs), other (specify design and LPW).
		Standard Vendible Product	Can (specify size in ounces), Bottle (specify size in ounces)
		Standard Vendible Capacity	
		Low Power State - lighting	True, false (if True, also include: Hard-wired controls OR software)
		Low Power State – refrigeration	True, false (if True, also include: Hard-wired controls OR software)
		Low Power State – whole machine	True, false (if True, also include: Hard-wired controls OR software)
		On-Site Adjustable by Operator or Owner	True, false (if True, also include: Hard-wired controls OR software)
		Refrigerant Type	Ozone-depleting, non-ozone-depleting
		Insulation Type	Ozone-depleting, non-ozone-depleting
		Internal volume (multi-package units only)	

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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	
		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
		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]	

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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
		*Computer Room Air Conditioner	Yes, no
		*ARI Classification	
		*Voltage	
		*Electrical Phase	1, 3
		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]	

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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)	
		Cooling Capacity at 82°F	
		Electrical Input at 82°F	
		Degradation Coefficient at 82°F	
		Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Cooling Capacity at 105°F (Voluntary)	
		Electrical Input at 105°F (Voluntary)	
		Energy Efficiency Ratio (EER) at 105°F (Voluntary)	
		Cooling Capacity at 115°F (Voluntary)	
		Electrical Input at 115°F (Voluntary)	
		Energy Efficiency Ratio (EER) at 115°F (Voluntary)	
		Space-constrained Product	Space-constrained; through-the-wall; 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	
		Electrical Input at 82°F	
		Degradation Coefficient at 82°F	
		Cooling Capacity at 95°F	
		Electrical Input at 95°F	
		Energy Efficiency Ratio (EER) at 95°F	
		Cooling Capacity at 105°F (Voluntary)	
		Electrical Input at 105°F (Voluntary)	
		Energy Efficiency Ratio (EER) at 105°F (Voluntary)	
		Cooling Capacity at 115°F (Voluntary)	
		Electrical Input at 115°F (Voluntary)	
		Energy Efficiency Ratio (EER) at 115°F (Voluntary)	
		Heating Seasonal Performance Factor (HSPF)	
		Heating Capacity	
		Electrical Input	
		Space-constrained Product	Space-constrained; through-the-wall; 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 All Computer Room Air Conditioners	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

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Air-Source, Single Package Heat Pumps ≥ 65,000 Btu/hour and < 240,000 Btu/hour; and Air-Source, Split-System Heat Pumps ≥ 65,000 and < 240,000 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 < 240,000 Btu/hour and Evaporatively-Cooled Split System CAC < 240,000 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 < 240,000 Btu/hour and Water-Cooled, Split System CAC < 240,000 Btu/hour	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		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

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	Water-Source, Single Package Heat Pumps < 240,000 Btu/hour and Water-Source Split System Heat Pumps < 240,000 Btu/hour	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		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	
	Ground Water-Source, Single Package Heat Pumps (< 240,000 Btu/hour except as noted) and Ground Water-Source Split System Heat Pumps (< 240,000 Btu/hour except as noted)	Compressor Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Indoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		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)	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
C	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)	
		Outdoor Fan Electrical Input (for models ≥ 65,000 Btu/hour only)	
		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	
	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	

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Table X Continued - Data Submittal Requirements

	Appliance	*Required Information*	*Permissible Answers*
D	Spot Air Conditioners	*Type	Single package, air-cooled; single package, evaporatively-cooled; split system: air-cooled condensing unit, coil with blower; split system: evaporatively-cooled condensing unit, coil alone; single package, air-cooled (FD); single package, evaporatively-cooled (FD); split system: air-cooled condensing unit, coil with blower (FD); split system: evaporatively-cooled condensing unit, coil alone (FD)
		Cooling Capacity	
		Total Electrical Input	
		Cooling Efficiency Ratio (CER)	
		Fan Electrical Input	
		Refrigerant Type	Ozone-depleting, non-ozone-depleting
	Evaporative Coolers	*Type	Direct, indirect, indirect/direct
		Evaporative Media Saturation Effectiveness (%) (for direct evaporative coolers only)	
		Media Type (for direct evaporative coolers only)	Expanded paper, woven plastic, aspen wood, rigid cellulose, other (specify).
		Cooling Effectiveness (for indirect evaporative coolers only)	
		Total Power (watts)	
		Airflow Rate (CFM)	
		ECER	
	Ceiling Fans, Except Low-Profile Ceiling Fans	CFM (low, medium, high)	
		Watts (low, medium, high)	
		Efficacy (low, medium, high) [CFM/watt]	
		Fan speed controls separate from light controls	True, false
		Adjustable Speed Controls	(Specify) speed, variable
		Reversible Fan Action Capable	Yes, no, Exception [See Section 1605.1(d)(1)(C)]
		Light Source Type	Compact fluorescent, incandescent, other (specify), None
	Low-Profile Ceiling Fans	None	
	Ceiling Fan Light Kits	Socket Type	Medium screw base, pin-based; other (specify)
		Packaged with all appropriate lamps to fill all sockets	Yes, no
		Screw-based Lamps Requirement (Screw-base only)	Meet 1605.1(d)(2)(A)1.a. or b. (specify)
		EnergyStar requirement compliant (pin-based sockets only)	Yes, no
		Operate with lamps totaling more than 190 watts (other socket types only)	Yes, no

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Table X Continued - Data Submittal Requirements

	Appliance	*Required Information*	*Permissible Answers*
D	Whole House Fans and Residential Exhaust Fans	*Residential Exhaust Fan Type	Inline single-port, Inline multi-port, Range hood, Bathroom and utility room
		*Whole-House Fan Type	Belt-drive single-fan, Belt-drive dual-fan, Direct-drive single-fan, Direct-drive dual-fan
		Fan Motor Power (watts)	
		Air Flow (CFM)	
		Air Flow Efficiency (CFM/watt)	
	Dehumidifiers	Product capacity (pints per day)	
		Energy Factor	
E	All Space Heaters	*Energy Source	Natural gas, LPG, oil, combination (natural gas and oil), electricity (electric residential boilers only)
		*Burner Type	Induced draft, luminous, injection type, power, pressure
		Constant burning pilot light, (for gas or oil models only)	Yes, no
		*Labeled for Outdoor Installation	Yes, no
		*Electrical Phase	1, 3, none
		Draft Equipment[1, 2]	Draft hood, draft diverter, barometric regulator, none
		Off-Cycle Devices	Stack damper, electro-mechanical inlet damper, electro-mechanical flue damper, none
		Flue Gas	Condensing, non-condensing
		Control	Single-stage, two-stage modulating, step modulating
		Fan Motor Design (furnaces only)[1, 2]	Single-speed, dual-speed, multiple-speed, variable speed
		Total Nominal Fan Motor Horsepower (furnaces only)	
		Fan Motor Type (furnaces only)	Premium, standard
		Fan Motor Power Factor (furnaces with variable-speed motors only) [1, 2]	
		Pump Motor Design (boilers only). Note: This information is not required for boilers that are not provided with a pump.	Single-speed, dual-speed, multiple-speed, variable speed
		Total Nominal Pump Motor Horsepower (boilers only). Note: This information is not required for boilers that are not provided with a pump.	
		Pump Motor Type (boilers only). Note: This information is not required for boilers that are not provided with a pump.	Premium, standard
		Pump Motor Power Factor (boilers with variable-speed motors only)[1, 2]	
		Nameplate Input Rating	
		Rated Output	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
E	Central Furnaces	*Mobile Home	Yes, no
		*Air Flow Direction	Up, down, horizontal
		Fan Blower Capacity, High, at 0.5" W.C. [1, 2]	
		Fan Blower Capacity, Low, at 0.5" W.C. [1, 2]	
		Thermal Efficiency (for models ≥ 225,000 Btu/hour input and for three-phase equipment < 225,000 Btu/hour input for which the manufacturer chooses to test using ANSI Z21.47-2001)	
		Standby Watts [controls, not fan energy] (for models ≥ 225,000 Btu/hour input only) [1, 2]	
		Annual Fuel Energy Consumption (for models < 225,000 Btu/hour input only, except for three-phase equipment for which the manufacturer chooses to test using ANSI Z21.47-2001)	
		Annual Fuel Utilization Efficiency [AFUE] (for models < 225,000 Btu/hour input only, except for three-phase equipment for which the manufacturer chooses to test using ANSI Z21.47-2001)	
		Annual Auxiliary Electrical Energy Consumption (for models < 225,000 Btu/hour input only, except for three-phase equipment for which the manufacturer chooses to test using ANSI Z21.47-2001)	
		Thermal Efficiency at Minimum Capacity Provided and Allowed by the Controls (for models ≥ 225,000 Btu/hour input only) [1, 2]	
	Room Heaters, Floor Furnaces, and Wall Furnaces	*Type	Room heater (vented fan); room heater (gravity); floor furnace (fan); floor furnace (gravity); wall furnace (direct vent fan); wall furnace (direct vent gravity); wall furnace (vented fan); wall furnace (vented gravity)
		Annual Fuel Utilization Efficiency (AFUE)	
		Auxiliary Electric Power (for fan-type heaters only)	
		Average Annual Auxiliary Electrical Energy Consumption (for fan-type heaters only)[1]	
	Duct Furnaces and Unit Heaters	*Type	Duct furnace; low static unit heater; high static unit heater; floor-mounted unit heater
		Thermal Efficiency at Maximum Rated Capacity	
		Energy Consumption During Standby	
		Thermal Efficiency at Minimum Rated Capacity	
		Power-Venting	Yes, no
		Automatic Flue Damper	Yes, no

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
E	Infrared Gas Space Heaters	*Type	Patio heater, non-patio heater
		Intensity	High, low
		Radiant Tube Type	Yes, no
		Portable	Yes, no
		Vented	Yes, no
		Physically Possible to Measure Radiant Coefficient	Yes, no
		Combustion Efficiency (for models using ANSI test method only)	
		Radiant Coefficient (for models using ANSI test method only; for models for which it is physically possible to measure radiant coefficient only)	
		Effective Heating Area (for models using FSTC test method only)	
		Efficiency Index (for models using FSTC test method only)	
	Combination Space-Heating and Water-Heating Equipment	*Primary Function	Primary function is space heating, secondary function is domestic water heating; primary function is domestic water heating, secondary function is space heating
		Volume (measured)	
		Volume (rated)	
		Energy Factor (for those models whose primary function is water heating)	
		Effective Space-Heating Efficiency (CA_{AFUE}) (for those models whose primary function is water heating)	
		Annual Fuel Utilization Efficiency (AFUE) (for those models whose primary function is space heating)	
		Effective Water-Heating Efficiency (CA_{EF}) (for those models whose primary function is space heating)	
		Combined Annual Efficiency (CAE)	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
E	Boilers	*Type	Steam, hot water
		Design	Copper, cast iron, other
		Automatic means for adjusting water temperature (small hot water boilers only)	Yes, no
		Input at Minimum Capacity[1]	
		Output at Minimum Capacity[1]	
		Combustion Efficiency (for models ≥ 300,000 Btu/hour input only)	
		Thermal Efficiency (for models ≥ 300,000 Btu/hour input and < 2,500,000 Btu/hour input only)	
		Thermal Efficiency (for models ≥ 2,500,000 Btu/hour input only)[1]	
		Standby Loss (for packaged boilers ≥ 300,000 Btu/hour input only) [1]	
		Standby Loss (for non-packaged boilers ≥ 300,000 Btu/hour input only) [2]	
		Thermal Efficiency at Minimum Capacity Rating (for non-packaged boilers ≥ 300,000 Btu/hour input only)	
		AFUE (for models < 300,000 Btu/hour input only)	
F	All Water Heaters	*Energy Source	Natural gas, LPG, oil, electric resistance, heat pump
		Rated Volume (except booster heaters, hot water dispensers, and large instantaneous water heaters < 10 gallons capacity)	
		Measured Volume (large water heaters only)	
		Rated Input	
		Heat Traps (for storage models only)	Yes, no
		Ozone Depleting Substance in Insulation[1, 2]	Yes, no
		Ozone Depleting Substance in Refrigerant (for heat pump water heaters only) [1, 2]	Yes, no
		Constant burning pilot light (for large gas and oil models only)	Yes, no
		Mobile Home	Yes, no
	Booster Heaters	Flow Capacity	
		Thermal Efficiency at 100% Capacity with 110°F Water Input Temperature	
	Hot Water Dispensers	Standby Loss	
	Mini-Tank Electric Water Heater	First Hour Rating	
		Height	
		Width at the Point of Greatest Width	
		Depth at the Point of Greatest Depth	
		Recovery Efficiency	
		Standby Loss % per hour	
		Total Standby Loss	
		Annual Energy Consumption	
	Other Small Electric Water Heaters	Annual Energy Consumption[1, 2]	
		Tabletop Water Heater	Yes, no
		First Hour Rating	
		Energy Factor	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
F	Large Electric Water Heaters	Thermal Efficiency (instantaneous models only)	
		Standby Loss, % per hour (except for those models > 140 gallons for which exemption from standby loss standard is claimed). Note: This data requirement is mandatory for all models except large instantaneous models in which the data requirement is voluntary.	
		Standby Loss, watts (except for those models > 140 gallons for which exemption from standby loss standard is claimed)	
		R-value of Insulation (for models > 140 gallons except those which comply with standby loss standard)	
	Small Gas Water Heaters and Small Oil Water Heaters	First Hour Rating (for storage models only)	
		Maximum Gallons Per Minute (for instantaneous models only)	
		Recovery Efficiency	
		Annual Energy Consumption[1, 2]	
		Energy Factor	
		Pilot Light Energy Consumption (for instantaneous models only)	
	Large Gas Water Heaters and Large Oil Water Heaters	Thermal Efficiency	
		Standby Loss, %/hr (except for those models > 140 gallons for which exemption from standby loss standard is claimed). Note: This data requirement is mandatory for all models except large instantaneous models in which the data requirement is voluntary.	
		Standby Loss, Btu/hr (except for those models > 140 gallons for which exemption from standby loss standard is claimed). Note: This data requirement is mandatory for all models except large instantaneous models in which the data requirement is voluntary.	
		Electrical Power During Recovery While Appliance is Heating (for storage models only)	
		Electrical Power During Standby	
		R-value of Insulation (for models > 140 gallons only) for which exemption from standby loss is claimed	
		Flue Damper (for models > 140 gallons only)	Yes, no
		Fan Assisted Combustion (for models > 140 gallons only)	Yes, no
		Hot Water Supply Boiler (for instantaneous models with input => 300,000 Btu/hour and <= 12,500,000 Btu/hour only)	Yes, no

* “Identifier” information as described in Section 1602(a).
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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
F	Heat Pump Water Heaters	Current Rating	
		Voltage	
		Energy Factor (for models ≤ 24 amps current rating only)	
		Standby Loss (for models >24 amps current rating only)	
		Thermal Efficiency (for models > 24 amps current rating and ≥ 4,000 Btu/hour per gallon only)	
		R-value of Insulation (for models > 24 amps current rating only)	
		Refrigerant Type[1, 2]	Ozone-depleting, non-ozone-depleting
G	Heat Pump Pool Heaters	Heating Capacity at Standard Temperature Rating	
		Readily-Accessible On-Off Switch	Yes, no
		Coefficient of Performance at Standard Temperature Rating	
		Heating Capacity at Low Temperature Rating	
		Coefficient of Performance at Low Temperature Rating	
		Heating Capacity at Spa Conditions Rating	
		Coefficient of Performance at Spa Conditions Rating	
		Refrigerant Type[1, 2]	Ozone-depleting, non-ozone-depleting
	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	
		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)	
	Portable Electric Spas	*Voltage	
		Volume (gallons)	
		Rated Capacity (number of people)	
		Normalized Standby Power (watts)	
		Spa Enclosure is Fully Insulated	Yes, no

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Table X Continued - Data Submittal Requirements

Appliance		Required Information	Permissible Answers
H	Plumbing Fittings	*Type	Showerhead, lavatory faucet, kitchen faucet, metering faucet, lavatory replacement aerator, kitchen replacement aerator, wash fountain, lift-type tub spout diverter, turn-type tub spout diverter, pull-type tub spout diverter, push-type tub spout diverter
		Flow Rate	
		Pulsating (for showerheads only)	Yes, no
		Rim Space (for wash fountains only)	
		Tub Spout Leakage Rate When New	
		Tub Spout Leakage Rate After 15,000 Cycles	
	Commercial Pre-rinse Spray Valves	Flow Rate (gpm)	
		Cleaning ability test	Pass, fail
I	Plumbing Fixtures	*Type	Blowout water closet, gravity tank type water closet, electromechanical hydraulic water closet, flushometer tank water closet, urinal, prison-type urinal, prison-type water closet, flushometer valve water closet, trough-type urinal, waterless urinal, vacuum type urinal, vacuum type water closet
		Water Consumption	
		Trough Length (trough-type urinals only)	
J	Fluorescent Lamp Ballasts	*Ballast Input Voltage	120, 277, other (specify)
		*Number of Lamps	
		*Type of Lamp	F34T12, F40T12, F96T12, F96T12/ES, F96T12HO, F96T12HO/ES, other T12 (specify), T5, T8, other (specify)
		Designed for Dimming	Continuous, stepped, no
		Designed for Dimming to 50% or Less of Maximum Output	Continuous, stepped, no
		Power Factor	
		Building Application	Designed but not labeled for use only in residential buildings, designed and labeled for use only in residential buildings, other
		Designed for Use in Ambient Temperatures of ≤ 0° F	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 Watts	
		Minimum Input Watts	
		Ballast Efficacy Factor	
		Relative Light Output	
		Circuit Design	Cathode cut-out, electronic, magnetic
		Start	Instant, rapid

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
K	Federally-regulated general service fluorescent lamps	*Type	4-foot medium bi-pin general service fluorescent lamp, 2-foot U-shaped general service fluorescent lamp, 8-foot slim line general service fluorescent lamp, 8-foot high output general service fluorescent lamp
		Nominal Lamp Wattage	
		Rated Color Rendering Index	
		Minimum Average Lamp Efficacy (LPW)	
	Federally regulated incandescent reflector lamps, and state regulated incandescent reflector lamps	Nominal Lamp Wattage	
		Minimum Average Lamp Efficacy	
	Federally regulated Medium Screw Base Compact Fluorescent Lamps	Lamp Power (Watts)	
		Minimum Efficacy (LPW)	
		Lamp Configuration	Bare or Covered (no reflector)
		1,000 Hour Lumen Maintenance	Yes, no
		Lumen Maintenance Requirements	Yes, no
		Rapid Cycle Stress Test	Yes, no
		Average Rated Lamp Life	Yes, no
	Federally regulated Medium Screw Base General Service Incandescent Lamps; Medium Screw Based LEDs, OLEDs	Type	General Service Incandescent, LED, OLED
		Voltage Range	
		Rated Lumen Range	
		Maximum Rate Wattage	
		Minimum Rate Lifetime	
		Color Rendering Index	
		Minimum Efficacy (LPW) (required on or after January 1, 2018)	
		Modified Spectrum	Yes, no
		Bulb Finish (incandescent only)	Clear, frost, soft white
		ANSI-designated Bulb Shape	A-15, A-19, A-21, A-23, A-25, PS-25, PS-30, BT-14.5, BT-15, CP-19, TB-19, CA-22
	Federally regulated Candelabra Base and Intermediate Base Incandescent Lamps	Base Type	Candelabra, intermediate
		Maximum Rated Wattage	
	Medium Screw Base Modified Spectrum General Service Incandescent Lamp	Type	
		Rated Voltage	
		Rated Lumen Range	
		Maximum Rate Wattage	
		Minimum Rate Lifetime	
		Color Rendering Index	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
K	State-regulated medium screw base general service incandescent lamps	Rated Lumens	
		Rated Lamp Wattage	
		Bulb finish	Clear, frost, soft white
		Average Lamp Efficacy	
		ANSI-designated bulb Shape	A-15, A-19, A-21, A-23, A-25, PS-25, PS-30, BT-14.5, BT-15, CP-19, TB-19, CA-22
	State-regulated medium screw base general service Compact Fluorescent lamps	Rated lumens	
		Rated lamp wattage	
		Average lamp efficacy	
	State-regulated medium screw base general service Light Emitting Diode (LED) lamps, and Organic LED (OLED) lamps	Rated lumens	
		Rated lamp wattage	
		Average lamp efficacy	
L	Emergency Lighting	Light Source Type	LED, electroluminescent, fluorescent, incandescent, other (specify)
		Height of Letters “E, X, T”	
		Width of Letters “E, X, T”	
		Height of Letter “I”	
		Width of Letter “I”	
		Battery Backup	Yes, no
		Number of Faces	
		Sign Format	Edge-lit, panel, matrix, stencil, other (specify)
		Input Power	
		Minimum Luminance of Face	
		Maximum Luminance of Face	
		Average Luminance of Face	
		Maximum to Minimum Luminance Ratio	
		Luminance Contrast	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
L	Self-Contained Lighting Controls	Includes installation and calibration instructions	Yes, no
		Includes indicator lights which consume one watt or more	Yes, no
		Meets the requirements of a residential automatic time-switch control	Yes, no
		Meets the requirements of a commercial automatic time-switch control	Yes, no
		Meets the requirements of an astronomical time-switch control	Yes, no
		Meets the requirements of an motion sensor	Yes, no
		Meets the requirements of an automatic daylight control	Yes, no
		Is integrated with a photo-control	Yes, no
		Meets the lighting photo-control requirements	Yes, no
		Meets the dimmer control requirements	Yes, no
		Meets general occupancy sensor requirements	Yes, no
		Is rated for outdoor use	Yes, no
		Meets partial on requirements	Yes, no
		Meets partial off requirements	Yes, no
		Meets vacancy sensor requirements	Yes, no
		Uses ultrasonic occupancy detection	Yes, no
		If uses ultrasonic occupancy detection, meets ultrasound requirements	Yes, no, N/A
		Uses electromagnetic radiation for occupancy detection	Yes, no
		If uses electromagnetic radiation for occupancy detection, meets electromagnetic irradiance at 5cm from emitter (mW/cm2)	Yes, no, N/A
M	Traffic Signal Modules for Vehicle control	Module Color	Green, amber, red
		Module Type	Circular, arrow, lane control-arrow, lane control-X, pedestrian, other (specify)
		Modular Size (circular, arrow only)	
		Nominal Wattage at 25° C	
		Maximum Wattage at 74° C	
	Traffic Signal Modules for Pedestrian Control	Module Type	Hand, Walking Person, walk, don't walk, countdown (Specify)
		Power Consumption at 25° C	
		Power Consumption at 74° C	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
N	Torchieres	*Lamp Type of Upward-Facing Lamp(s)	Screw-based Incandescent, Halogen, Fluorescent Pin-based, Other (specify)
		*Lamp Type of Side Lamp(s)	Screw-based Incandescent, Halogen, Fluorescent Pin-based, Other, None (specify)
		Total Number of Lamp Sockets	
		Maximum Possible Power Demand, All Sockets (watts)	
		Method of Insuring 190 Watt Maximum Power Consumption	Current-limiting Device, Thermal Switch, Other (specify)
	Portable Luminaires	Type of Portable Luminaire	Floor, table, other (specify)
		Total Number of lamp sockets	
		Base type	Candelabra base, intermediate base, medium screw-base, pin-base; other (specify)
		Compliance method used	Dedicated fluorescent lamp socket; GU-24 line-voltage socket; LED luminaire or light engine; E12, E17, or E26 screw-based socket w/ prepackaged lamp; Halogen lamp socket w/ controls
		Zero standby power (for luminaires with internal power supplies only)	Yes, No
		GU-24 sockets rated (for use with incandescent lamps for luminaires with GU-24 sockets only)	Yes, No
		LED Light Output (for LED luminaires only)	
		LED Efficacy (for LED luminaires only)	
		Color Correlated Temperature (for LED luminaires only)	
		Color Rendering Index (for LED luminaires only)	
		Power Factor (for LED luminaires labeled or sold for residential use only)	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
N	Metal Halide Luminaires	*Lamp Position (orientation)	Vertical Base-Up, Vertical Base-Down, Horizontal, Universal, Other (specify)
		Lamp Rating, low (watts)	
		Lamp Rating, high (watts)	
		Outdoor Luminaire	Yes, no
		Compliance Option Used	≥ 90/92% efficient ballast, ≥ 88% efficient ballast with integral control (Occupancy Sensor), ≥ 88% efficient ballast with integral control (Automatic Daylight Control), ≥ 88% efficient ballast labeled for relamping with only 150-160 watt, 200-215 watt, 290-335 watt, or 336-500 watt lamps
		Ballast Type [only applies to models manufactured on or after January 1, 2006]	Probe-start electronic, probe-start magnetic, pulse-start electronic, pulse-start magnetic, other (specify)
		Minimum Ballast Efficiency (percent)	
		Integral Control Type (for integral control compliance method only)	Occupancy sensor, Automatic daylight control
		Integral Control Method (for integral control compliance method only)	Directly into luminaire housing Packaged and sold pre-wired Integrated wireless radio controlled sensor
		Maximum relamping rated wattage on a factory-installed label (watts) (for relamping wattage compliance method only)	
		Packaged with efficient lamps (for relamping wattage compliance method only)	Yes, no
	Under-Cabinet Fluorescent Fixtures (Luminaires)	Lamp Length (inches)	
		Number of Lamps for which Fixture (Luminaire) is Designed	
		Ballast Efficacy Factor	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
O	Dishwashers	*Type	Compact, standard
		* Number of Place Settings	
		Power Consumption Per Cycle	
		Water Heating Dishwasher	Yes, no
		Truncated Normal Cycle Capable	Yes, no
		Energy Factor	
		Maximum Energy Use (required only for models manufactured on or after January 1, 2010)	
		Maximum Water Use (required only for models manufactured on or after January 1, 2010)	
P	Clothes Washers that are federally regulated consumer products	*Type	Front-loading, top loading
		*Controls	Automatic, semi-automatic, other (specify)
		*Axis	Horizontal, vertical
		Suds-Saving	Yes, no
		Combination Washer/Dryer[1]	Yes, no
		Clothes Container Compartment Capacity	
		Power Consumption Per Cycle[1]	
		Water Consumption Per Cycle	
		Energy Factor	
		Water Factor	
		Remaining Moisture Content	
	Clothes Washers that are not federally-regulated consumer products	*Type	Front-loading, top loading
		*Controls	Automatic, semi-automatic, other (specify)
		*Axis	Horizontal, vertical
		Suds-Saving	Yes, no
		Combination Washer/Dryer	Yes, no
		Clothes Container Compartment Capacity	
		Power Consumption Per Cycle	
		Water Consumption Per Cycle	
		Energy Factor	
		Water Factor	
		Remaining Moisture Content (required only on and after January 1, 2004)	
Q	Clothes Dryers	*Energy Source	Gas, electric
		*Drum Capacity	
		*Voltage	120, 240, other (specify)
		Combination Washer/Dryer[1]	Yes, no
		Automatic Termination Control[1]	Yes, no
		Energy Factor	
		Constant Burning Pilot Light (Gas models only)	Yes, no

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
R	Consumer Product Cooking Products [filing requirements take effect only when there is a federal standard or federal reporting requirement for annual cooking energy consumption (or similar measure of energy performance)]	*Type	Conventional range, conventional cooking top, conventional oven, microwave oven, microwave/conventional range, other (specify)
		*Energy Source	Gas, electric, microwave
		Electrical Supply Cord (for gas models only)	Yes, no
		*Constant Burning Pilot Light	Yes, no
		Annual Cooking Energy Consumption	
		Annual Self-Cleaning Energy Consumption (for conventional ovens only)	
		Total Annual Energy Consumption (for conventional ovens only)	
		Clock Power Consumption (for gas conventional ovens only)	
		Pilot Light Consumption (for gas conventional ovens only)	
		Annual Secondary Energy Consumption (for gas conventional ovens only)	
	Commercial Convection Ovens	Energy Input Rate	
		Idle Energy Consumption Rate	
	Commercial Hot Food Holding Cabinets	Measured Interior Volume (cu. ft.)	
		Energy Input Rate	
		Idle Energy Consumption Rate	
	Commercial Range Tops	Energy Input Rate	
		Cooking Energy Efficiency	
		Test Cooking Vessel Diameter	
S	Electric Motors	Type (data required for Subtype I, Subtype II, Fire Pump and NEMA Design B motors on or after December 19, 2010 only)	NEMA Design A, NEMA Design B, IEC Design N, other equivalent design, Multiple-Designs (two or more of NEMA Design A, NEMA Design B, IEC Design N, other equivalent design), General purpose subtype I, General purpose subtype II, Fire pump motor, NEMA Design B general purpose
		Voltage	230, 460, both 230 and 460, multi-voltage (includes 230 or 460)
		Speed[1]	Single, multiple
		Rated Horsepower	
		Input Power	In kilowatts (kW)
		Air Exchange	Open, enclosed
		Number of Poles	2, 4, 6, 8
		Nominal Full Load Efficiency	

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Table X Continued - Data Submittal Requirements

	Appliance		Required Information	Permissible Answers
T	Distribution Transformers		Distribution Transformer type (Data required for liquid-immersed and medium-voltage dry-type on or after January 1, 2010 only)	Low-voltage dry-type; liquid-immersed; medium-voltage dry-type
			*Phase	1, 3
			kVa (BIL kVa for medium-voltage dry-type)	
			Rated Output Power	
			Total Loss Power	
			Efficiency (for medium-voltage models, this will be the Efficiency at 20-45 kV)	
			Efficiency 2 (medium voltage models only, Efficiency at 46-95 kV)	
			Efficiency 3 (medium voltage models only, Efficiency at ≥ 96 kV)	
U	Power Supplies		None	
V	Televisions		Type*	CRT, Plasma, LCD, DLP, Rear Projection, Laser, OLED, LCOS
			Viewable Screen Area	
			Screen Size	
			Automatic Brightness Control	Yes, No
			Automatic Brightness Control enabled	Yes, No
			Forced menu	Yes, No
			Native Vertical Resolution	
			Aspect Ratio	
			Integrated Occupancy Sensor	Yes, No
			L_{home}	
			L_{high}	
			Luminance Ratio	
			TV Standby-Passive Mode Power (watts)	
			On Mode Power (watts)	
			Retail On Mode Power (watts)	
			Power Factor	
	Consumer Audio and Video Equipment	Compact Audio Products	Power Usage in Audio Standby-Passive Mode for Models Without a Permanently-Illuminated Clock Display (watts)	
			Power Usage in Audio Standby-Passive Mode for Models With a Permanently-Illuminated Clock Display (watts)	
		Digital Versatile Disc Players and Digital Versatile Disc Recorders	Power Usage in Video Standby-Passive Mode (watts)	

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Table X Continued - Data Submittal Requirements

	Appliance	Required Information	Permissible Answers
W	Small Battery Charger Systems	Product Type	AA/AAA battery charger, auto/marine/RV, cell phone, cordless phone, emergency backup lighting, handheld barcode scanner, laptop, personal electric vehicle, portable lighting, two-way radio, uninterruptable power supply, other (specify)
		24-hour charge and maintenance energy	
		Battery maintenance mode power	
		No battery mode power	
		Battery capacity of tested battery (if more than 1 charger port report the total of all battery capacities connected during test)	
		Inductive charger systems	Yes, no
		Number of charger ports	
		Compatible battery chemistries	
		Battery backup or uninterruptible power supply	Yes, no
		Á la carte charger	Yes, no
		USB charger system	Yes, no
		Location of marking or labeling	Packaging, Product
	Large Battery Charger Systems	Product Type	Single phase lift-truck, three phase lift-truck, other (specify)
		Charge return factor 100	
		Charge return factor 80	
		Charge return factor 40	
		Power conversion efficiency	
		Power factor	
		Maintenance mode power	
		No battery mode power	
		Battery capacity of tested battery	
		Family certification	Yes, no
		Compatible battery chemistries	
		Location of marking or labeling	Packaging, Product

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(4) **Declaration.**

(A) Each statement shall include a declaration, executed under penalty of perjury of the laws of California, that:

1. all the information provided in the statement is true, complete, accurate, and in compliance with all applicable provisions of this Article;
2. if the statement is being filed electronically, that the requirements of Section 1606(g) have been and are being complied with;
3. for appliances for which there is an energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3, that the appliance complies with the applicable standards;
4. the appliance was tested under the applicable test method specified in Section 1604, and, for the following appliances, was tested as follows:
   a. for wine chillers that are consumer products, the appliance was tested to 10 CFR Section 430.23(a)(2008) with the modifications referenced in Table A-1;
   b. for automatic commercial ice-makers manufactured on or before December 31, 2009, the appliance was tested to ARI 810-2003, and the reported harvest rate is within 5% of the tested value;
   c. for multi-package refrigerated bottled or canned beverage vending machines, the volume was measured using ANSI/AHAM HRF-1-2004;
   d. for other self-contained commercial refrigerators, refrigerator-freezers, and freezers both with and without doors, the appliance's volume was measured using ANSI/AHAM HRF-1-2004 and the controls of all appliances were adjusted to obtain the product temperatures referenced in Table A-2;
   e. for other self-contained commercial refrigerators, refrigerator-freezers, and freezers with doors that are pass-through and roll-through refrigerators and freezers, that the back (loading) doors remained closed throughout the test;
   f. for all refrigerators, refrigerator-freezers, and freezers were tested using alternating current electricity only;
   g. for all split system central air conditioners and compressor-containing units, these models were tested with the non-compressor containing unit most likely to represent the highest national sales volume for the combined equipment;
   h. for all gas-fired air conditioners and gas-fired heat pumps, all appliances were tested to ANSI Z21.40.4-1996 as modified by CEC, Efficiency Calculation method for Gas-Fired Heat Pumps as a New Compliance Option (1996);
   i. for evaporative coolers, all appliances were tested to the applicable test method referenced in Table D-1 with the modifications appearing in Table D-1;

j. for whole house fans, all appliances were tested to HVI-916, and were tested with manufacturer-provided louvers in place;

k. for heat pump pool heaters, all appliances were tested using ANSI/ASHRAE 146-1998, as modified by the Addendum Test Procedure published by the Pool Heat Pump Manufacturers Association as referenced in Table G; and

l. for commercial pre-rinse spray valves, all appliances were tested to ANSI/ASTM F2324-03, provided that adjustable flow-rate units be tested at their maximum possible flow rate.

m. for battery charger systems for which certification is based on testing of representative battery charger system models, the models tested as representative are those known or expected to have the poorest performance characteristics such that the data generated meets the requirements of Section 1606(a)(3)(E) for all associated models.

5. all units of the appliance are marked as required by Section 1607, and, for the following appliances, are marked as follows:

a. for all air conditioners, heat pumps, furnaces, boilers, and water heaters that are not subject to NAECA and that comply with the October 29, 2001 provisions in Tables 6.2.1 A through G of ASHRAE/IESNA Standard 90.1-1999, they are marked, permanently and legibly on an accessible and conspicuous place on the unit, with a statement that the equipment complies with the 2001 requirements of ASHRAE Standard 90.1;

b. for all other air conditioners, heat pumps, furnaces, boilers, and water heaters that are not subject to NAECA and that comply with the October 29, 1999 provisions (but not with the October 29, 2001 provisions) in Tables 6.2.1 A through G shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, with a statement that the equipment complies with the 1999 requirements of ASHRAE Standard 90.1;

c. for all distribution transformers, each appliance complies with the labeling requirements of NEMA Standard TP3-2000;

d. for all illuminated exit signs meeting the criteria of Section 1605.1(l), each appliance is marked by the manufacturer with a block E inside a circle; the mark commonly referred to as “Circle E.” The size of the mark shall be commensurate with other markings on the sign, but not smaller than ¼";

e. for all torchieres, each unit of torchieres and each package containing a torchiere is marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/8” on the inner surface of the reflector bowl of the torchiere, and ¼” on the packaging, "LAMPS MUST TOTAL NO MORE THAN 190 WATTS- TORCHIERE IS NON-COMPLIANT IF IT IS ABLE TO DRAW MORE THAN 190 WATTS.";

f. for ceiling fans, each package containing a ceiling fan whose diameter exceeds 50 inches is marked, permanently and legibly on an accessible and conspicuous place on the unit's packaging, in characters no less than ¼", the unit's airflow at high, medium, and low speed in CFM, and the unit's air flow efficiency in CFM/watt at high, medium and low speed;

g. for commercial pre-rinse spray valves, each unit is marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/8", the flow rate of the unit, in gallons-per minute (gpm) at 60 psi;

h. for residential pool pumps, each pool pump is marked permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", with the nameplate HP of the pump and, if manufactured on or after January 1, 2010, with the statement, "This pump must be installed with a two-, multi-, or variable-speed pump motor controller.";

i. for residential pool pump motors, each pool pump motor is marked permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", with the pool pump motor capacity of the motor.

j. for televisions, each television shall display the on mode power consumption as determined using the test method in Section 1604(v)(3) of this Article and as certified by the manufacturer under the requirements found in Section 1606(a) of this Article;

[*Note: This subdivision is no longer effective due to changes in state and federal law. (See Public Resources Code section 25213, subdivision (b), and 16 Code of Federal Regulations section 305.17).]

k. for televisions, any publication, website, document, or retail display that is used for sale or offering for sale a television manufactured on or after January 1, 2011 and which includes a description of the physical dimensions of the television shall include the identical on mode power consumption, in watts, immediately following and in the same font and same font size as the description of the physical dimensions, as filed under the requirements found in Section 1606(a)(3)(D) of this Article.

[*Note: This subdivision is no longer effective due to changes in state and federal law. (See Public Resources Code section 25213, subdivision (b), and 16 Code of Federal Regulations section 305.20, subdivisions (g) and (h)).]

If the manufacturer is a corporation, partnership, or other business entity, the declaration shall be signed by an individual authorized to make the declaration and file the statement on behalf of the business entity, and the declaration shall contain an affirmation that the individual signing is so authorized.

(B) The declaration shall be submitted and maintained as follows:

1. Statements filed on paper.

   a. If the statement is filed by a manufacturer, then the manufacturer shall file a wet-signed paper declaration with the Executive Director and the Executive Director shall keep the declaration.

   b. If the statement is filed by a third party under Section 1606(f), then the manufacturer shall file a wet-signed paper declaration with the third party and the third party shall keep the declaration and shall provide it to the Executive Director on request.

2. Statements filed electronically.

   a. If the information is filed by a manufacturer, then either:

      (i) the manufacturer shall file a wet-signed paper declaration with the Executive Director and the Executive Director shall keep the declaration;

      (ii) if the Executive Director has approved the use of a unique digital identifier for this purpose, the manufacturer shall include in the statement a declaration digitally signed under Government Code 16.5 and Title 2, California Code of Regulations, Division 7, Chapter 10 (beginning with Section 22000); or

      (iii) the manufacturer shall execute a wet-signed paper declaration, electronically scan and copy the declaration, include the electronic copy of the declaration with the statement filed with the Executive Director, and keep the wet-signed paper declaration and provide it upon request to the Commission; and the Commission shall keep the electronic copy of the declaration.

   b. If the information is filed by a third party under Section 1606(f), then either:

      (i) the manufacturer shall file a wet-signed paper declaration with the third party and the third party shall keep the declaration and shall provide it to the Executive Director on request;

      (ii) if the Executive Director has approved the use of a unique digital identifier for this purpose, the manufacturer shall execute a declaration digitally signed under Government Code 16.5 and Title 2, California Code of Regulations, Division 7, Chapter 10 (beginning with Section 22000), and provide the electronic declaration to the third party; and the third party shall keep a copy of the electronic declaration and shall provide it to the Executive Director on request; or

      (iii) the manufacturer shall execute a wet-signed paper declaration, electronically scan and copy the declaration,

include both the wet-signed paper declaration and the electronic copy of the declaration with the electronic information provided to the third party; the third party shall include the electronic copy with information filed with the Executive Director, shall keep an electronic copy, and shall provide the wet-signed paper declaration to the Executive Director upon request; and the Executive Director shall keep a copy of the electronic declaration.

(b) Review of Statements by the Executive Director.

In this subsection, "manufacturer" also includes a third party filing a statement under Section 1606(f).

(1) **Determination.** The Executive Director shall determine whether a statement is complete, accurate, and in compliance with all applicable provisions of this Article, and whether the appliance for which the statement was submitted complies with all applicable standards in Sections 1605.1, 1605.2, and 1605.3.

(2) **Informing Manufacturer and third party of Determination.**

(A) The Executive Director shall inform the manufacturer or the third party, as described in Section 1606(f), of the determination within 30 calendar days after receipt by the Executive Director whether it is filed electronically or on paper.

(B) The Executive Director's determination shall be sent to the manufacturer electronically if the statement was filed electronically and either electronically or on paper if the statement was filed on paper.

(3) **Nature of Determination.**

(A) **Statement is Incomplete.** If the Executive Director determines that a statement is not complete, or that the statement does not contain enough information to determine whether it is accurate or whether the appliance complies with an applicable standard, the Executive Director shall return the statement to the manufacturer with an explanation of its defects and a request for any necessary additional information. The manufacturer shall refile the statement with all information requested by the Executive Director and with any other information it wants to file. The Executive Director shall review the refiled statement according to the time limits in Section 1606(b)(2).

(B) **Statement is Inaccurate or Appliance Does Not Comply.** If the Executive Director determines that the statement is inaccurate or that the appliance does not comply with an applicable standard, the Executive Director shall reject the statement and return it to the manufacturer with an explanation of its defects. The manufacturer may submit a revised statement for the appliance at any time.

(C) **Statement is Complete and Accurate and Appliance Complies.** If the Executive Director determines that the statement is complete and accurate and that the appliance complies with all applicable standards, the Executive Director shall immediately include the appliance in the database and shall so inform the manufacturer. (Section 1608(a) states that no appliance within the scope of these

regulations may be sold or offered for sale in California unless the appliance is in the database.)

(c) Database of Appliance Models.

(1) **Creation of Database.** The Executive Director shall maintain a database. The database shall consist of two parts:

(A) "Active Database." The active database shall contain, at least, information on all appliances that are currently in production, for which complete and accurate statements have been received pursuant to Section 1606(a), and that have not been removed from the database pursuant to Sections 1606(c)(3), Sections 1606(d)-(e), or 1608(c)-(e).

If basic models are certified using an alternate test procedure established pursuant to Section 1603(c)(1) or for which the Executive Director has made a specification under either Section 1603(c)(2)(A) or Section 1603(c)(2)(B), the Active Database shall contain a second section which shall contain only those basic models for which certification to an applicable alternate test procedure is made.

(B) "Historical Database." The historical database shall contain, at least, information on all appliances that:

1. are no longer in production, for which complete and accurate statements have been received pursuant to Section 1606(a) or
2. have been removed from the active database pursuant to Sections 1606(e)(2) or 1608(c).

(2) **Status of Database.** The database is the directory published by the Commission within the meaning of Title 24, California Code of Regulations, Part 6, Subchapter 1, Section 100(h). The database in existence on the effective date of this paragraph is the directory referred to in this paragraph, until that existing database is modified by the Executive Director pursuant to this Article.

(3) **Confirmation of Database Listings.** The Executive Director may, by writing to the most recent address filed pursuant to Section 1606(a)(2)(B), request each manufacturer of an appliance listed in the database to confirm the validity, or to correct in compliance with this Article, all of the information in each of its database listings, including but not limited to the appliance's compliance with any applicable standard adopted since the most recent filing by the manufacturer. If, within 30 days after the mailing, there is any appliance for which the Executive Director has not received a reply from the manufacturer that confirms the validity of, or corrects, all of the information in the database listing, the Executive Director shall write via certified mail (registered mail to non-U.S. destinations), to the same address. If within 30 days of the latter mailing there is no such reply, the appliance shall be removed from the Active Database and moved into the Historical Database, and it may be presumed that the appliance is no longer in production.

(d) Assessment of Completeness, Accuracy, and Compliance of Manufacturer Statements.

Notwithstanding any other provision of these regulations, the Executive Director may at any time challenge the completeness, accuracy, and compliance with the requirements of this Article, of any statement or confirmation filed pursuant to this Section. If the statement is incomplete or inaccurate, or if the Executive Director determines that the statement otherwise fails to comply with any of the requirements of this Article (including but not limited to non-compliance with standards currently in effect, but not in effect when the statement was filed), then he or she shall, ten working days after providing written notice by certified mail (registered mail to non-U.S. destinations) to the person designated in Section 1606(a)(2)(B), remove the appliance from the database described in Section 1606(c).

(e) Modified and Discontinued Appliances.

(1) If any of the characteristics listed in Table X are changed, the manufacturer shall file a statement containing only the identifiers and the modified information for all the characteristics that have been changed for the appliance. Upon receipt of such a statement, the Executive Director shall review the statement under Section 1606(b). If the statement is complete, accurate, in compliance with all applicable standards, the Executive Director shall modify the database accordingly.

(2) After any appliance has ceased being sold or offered for sale in California the manufacturer shall file a statement so stating and only containing the identifiers shown in Table X for the appliance. Upon receipt of such a statement, the Executive Director shall review the statement under Section 1606(b). If the statement is complete, accurate, and in compliance with all applicable provisions of this Article, the Executive Director shall move the appliance from the Active Database to the Historical Database.

(f) Filing by Third Parties.

(1) A third party may file on behalf of a manufacturer the information required by Sections 1606(a)(2), 1606(a)(3), 1606(a)(4), 1606(c)(3), or 1606(e) if:

(A) before or with its first submittal, and at least annually thereafter, the third party submits to the Executive Director, under penalty of perjury, persuasive evidence that:

1. the third party has read and understood all the provisions of this Article, of federal law, and of all other documents applicable to each appliance category in Sections 1601 (a) – (w) for which the third party will file information; and
2. the third party is financially and technically capable of complying with the applicable provisions of this Article;

(B) the manufacturer submits to the third party:

1. the information that is required;
2. a declaration under penalty of perjury, and where applicable pursuant to Section 1606(a)(4)(B),

a. that the information is true, complete, accurate, and in compliance with all applicable provisions of this Article, and,

b. for appliances for which there is an energy efficiency, energy consumption, energy design, water consumption, water efficiency, or water design standard in Section 1605.1, 1605.2, or 1605.3, that the model complies with the applicable standards; and

3. an authorization, filed with both the third party and the Commission, for the third party to submit the information to the Commission on behalf of the manufacturer.

(C) the third party submits to the Executive Director, in compliance with the requirements of this Article applicable to manufacturer-filed submittals:

1. the information that is required; and

2. a declaration under penalty of perjury, and where applicable pursuant to Section 1606(a)(4)(B), that:

a. to the best of the third party's knowledge and belief, the information submitted to the Commission is the same as the information submitted by the manufacturer to the third party; the information is true, complete, accurate, and in compliance with all applicable provisions of this Article; and, for appliances for which there is an energy efficiency, energy design, water consumption, or water efficiency standard in Section 1605.1, 1605.2, or 1605.3, the appliance complies with the applicable standards; and

b. the requirements of Sections 1606(f)(1) are met;

(D) the third party has an agreement with the manufacturer that allows the third party to challenge the truth, accuracy, and completeness of information submitted by the manufacturer to the third party, and to refuse to submit to the Commission information that the third party believes is not truthful, accurate, or complete; and

(E) the third party provides, upon ten days' written notice from the Executive Director, all information provided by the manufacturer and all information relating to any challenges pursuant to Section 1606(f)(1)(D).

(F) This paragraph (F) applies only to the situation in which one manufacturer (designated Manufacturer A here) manufactures an appliance, and another manufacturer (designated Manufacturer B here) wants to be designated as the manufacturer pursuant to Section 1606(a)(2)(A), the first line of Table X, and Section 1607(b)(1). In that situation, Manufacturer A may file as a third party on behalf of Manufacturer B, if:

1. there is compliance with all of the requirements of paragraphs (A)-(E) of Section 1606(f)(1);

2. the names, addresses, telephone numbers, and e-mail addresses of each manufacturer are included in the filing;

3. the filing indicates which manufacturer is acting as Manufacturer A and which manufacturer is acting as Manufacturer B; and

4. within the 12 months before the filing, both manufacturers have jointly submitted to the Commission a statement that both want to make filings pursuant to this paragraph (F).

(2) Whether a manufacturer files information required by this Section by itself or via a third party, the manufacturer remains responsible for the truth, accuracy, completeness, and timeliness of all required filings.

(3) At any time the Executive Director may forbid a third party from making filings for a specified time, allow reinstatement subject to appropriate conditions, and remove affected appliances from the database, if he or she finds that there is noncompliance with an applicable provision of this Article.

(4) If the Executive Director has suspended or revoked the approval of a trade association directory under Section 1606(h)(2)(B), that trade association is prohibited from being approved as a third party until it has obtained re-approval under Section 1606(h)(2)(B).

(5) The provisions of this Article are applicable to all submittals and filings, whether made by a manufacturer directly or by a third party on behalf of a manufacturer.

(g) Electronic Filing.

(1) Unless otherwise stated in this Article, the statements and other submittals required or allowed by this Article shall be filed electronically by all third parties acting under Section 1606(f) so that:

(A) the electronic filing uses a format and characteristics, including without limitation appropriate formatting, that are specified by the Executive Director, and includes a declaration that complies with Section 1606(a)(4);

(B) within three days of the electronic filing being made, an exact paper copy of all declarations required by Sections 1606(a)(4) or 1606(f)(1)(C)2. is executed by a person authorized under the appropriate section to execute it;

(C) for two years from the date of filing the person making the filing keeps the exact paper copies required by paragraph (B) immediately above and provides those copies to the Executive Director upon 10 days' written request.

(2) Any electronic filing constitutes a representation by the person making the filing that:

(A) all applicable requirements of this Article have been met;

(B) the person will electronically acknowledge receipt of all electronic communications concerning the filing from the Executive Director to the person;

(C) all electronic communications concerning the filing from the Executive Director to the person shall be deemed received by the person upon notification to the Executive Director, by the computer from which the Executive Director communication has been sent, that the communication has been sent; and

(D) all electronic communications concerning the filing from the person to the Executive Director shall be deemed received by the Executive Director only upon actual receipt.

(3) At any time the Executive Director may forbid electronic filings by any person, or generically, and may remove affected appliance models from the database, if he or she finds that an applicable requirement of this Article is not being met.

(h) Trade Association Directories.

(1) A paper or electronic directory, or a part thereof, published by an appliance trade association may be used for any purpose that the database established pursuant to Section 1606(c) is used for, if the Executive Director approves the directory, or part thereof, by determining and confirming that:

(A) the trade association is an approved industry certification program for each appliance listed in the directory;

(B) all of the applicable requirements of Section 1606(f) for third party submittals are met for the directory;

(C) the entity submits to the Executive Director:

1. all of the information in the directory, within three working days of the approval of the directory;
2. all of the information in the directory that has changed since the previous submittal, at the end of each month during which there has been any change;
3. a declaration, signed under penalty of perjury of the laws of California, that to the best of the trade association's knowledge and belief:
   a. the information in the directory is the same as the information submitted by manufacturers to the trade association;
   b. the information is true, complete, accurate, and in compliance with all applicable provisions of this Article;
   c. each appliance complies with the applicable standards in Section 1605.1; and
   d. for any appliance for which there is a standard in Section 1605.3, that the appliance meets all applicable standards unless the directory states, in a format approved by the Executive Director (including without limitation font, type size, and placement in the directory), that it is illegal in California to sell the appliance or offer it for sale.

(D) for each appliance that is listed in a trade association directory, the directory includes all of the following information, where applicable to the appliance:

1. manufacturer
2. brand
3. model number as it appears on the appliance
4. type
5. fuel type
6. voltage
7. electrical phase
8. capacity or other size measurement
9. input

10. output
11. standby consumption, loss, or other similar measurement; and
12. energy efficiency, energy consumption, water efficiency, or water consumption;

(E) the directory contains no appliance in the following categories:

1. an appliance that fails to meet an applicable energy efficiency, energy consumption, energy design, water efficiency, or water consumption standard established in or pursuant to NAECA or EPAct;
2. an appliance for which the manufacturer has stated or certified that the appliance meets an energy efficiency, energy consumption, energy design, water efficiency, or water consumption standard not applicable to it; or
3. an appliance that does not, or an appliance whose manufacturer does not, meet an applicable requirement of this Article, unless the directory states, in a format approved by the Executive Director (including without limitation font, type size, and placement in the directory), that it is illegal in California to sell the appliance or offer it for sale; and

(F) each paper or electronic directory contains the following statement, in at least 20 point bolded type and on the front cover or first page, or in another format and with other characteristics as specified by the Executive Director:

"This directory [insert parts if appropriate] has been approved by the California Energy Commission (Commission) for determining compliance with its appliance efficiency regulations (Title 20, California Code of Regulations, Sections 1601-1608) and its building standards (Title 24, California Code of Regulations, Part 6). UNLESS INDICATED OTHERWISE, any appliance listed in this directory [insert parts if appropriate] may be sold, offered for sale, or installed in new construction in California. For appliances manufactured by manufacturers participating in this directory, but who have not given authorization for data submittal to the Commission, this directory cannot be used for determining compliance. For information about such appliances, appliances that are beyond the scope of this directory, or appliances produced by manufacturers who do not participate in this directory, please contact the Commission's Building Standards Hotline at 916-654-5106, 800-772-3300 (in California only), or <Title24@energy.state.ca.us>. Manufacturers not granting authorization for data submittal to the Commission as of the publication date of this directory include [list all affected manufacturers]"; and

(G) at the end of each calendar quarter, the trade association provides, at no cost to recipients, an electronic copy of the current directory or supplement or part thereof to the Executive Director and to all California building officials as specified by the Executive Director, and provides to the Executive Director a list of the building officials to whom the directory or supplement was sent.

(2) If the Executive Director at any time determines that an approved trade association directory does not comply with an applicable provision of this Article, or that any information in a trade association directory is substantially incomplete, inaccurate, or not in compliance with an applicable provision of this Article, then:

(A) upon written notice from the Executive Director the trade association shall immediately indicate in the directory, in a format approved by the Executive Director (including without limitation font, type size, and placement in the directory), that it is illegal in California to sell the appliance. In addition, the Executive Director shall remove the appliance from the Commission's database established under Section 1606(c) or indicate in the database that the appliance cannot legally be sold or offered for sale in California. The appliance shall be removed from, or indicated in, the Commission's database and the trade association directory, for at least sixty days, until the end of a proceeding held to consider the matter pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the third party or affected manufacturer's option, pursuant to Sections 11425.10-11425.60 of the California Government Code); and

(B) the Executive Director may suspend or revoke the approval of the trade association directory; if approval is revoked, the trade association may not seek re-approval for two years after the revocation.

(3) If the Executive Director takes action under Sections 1606(b)(3)(A) or (B), or 1608(c), (d), or (e), he or she shall direct that all trade association directories be modified accordingly.

(4) here may be more than one third party directory for the same appliance.

(i) Retention of Records.

Manufacturers, and third parties or trade associations acting under Sections 1606(a), 1606(f), and 1606(g), shall retain all data, forms, information, and all other records required by this Article concerning each appliance:

(1) for at least 2 years after the manufacturer informs the Executive Director, in writing, of the cessation of production of the appliance; and

(2) in a manner allowing ready access by the Executive Director on request.

The Executive Director shall retain all data, forms, information, and all other records required by this Article concerning each appliance for at least 10 years after the record is initially filed or reconfirmed.

(j) Portable Luminaire Sales Data

Beginning January 1, 2013, portable luminaire manufacturers selling products in California shall submit to the Energy Commission annual unit sales of portable non-screw based halogen luminaires sold in California, by major product class. Data for each calendar year shall be submitted no later than May 1 of the following year.

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 1607. Marking of Appliances.

(a) Scope of this Section.

Every unit of every appliance within the scope of Section 1601 shall comply with the applicable provisions of this Section. The effective dates of this section shall be the same as the effective dates shown in Section 1605.1, 1605.2 or 1605.3 for appliances for which there is an energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3. For appliances with no energy efficiency, energy consumption, energy design, water efficiency, water consumption, or water design standard in Section 1605.1, 1605.2, or 1605.3, the effective date of this section shall be January 1, 2006.

(b) Name, Model Number, and Date.

Except as provided in Section 1607(c), the following information shall be permanently, legibly, and conspicuously displayed on an accessible place on each unit:

(1) manufacturer's name or brand name or trademark (which shall be either the name, brand, or trademark of the listed manufacturer specified pursuant to Section 1606(a)(2)(A) or, if applicable, the designated manufacturer specified pursuant to Section 1606(f)(1)(F));

(2) model number; and

(3) date of manufacture, indicating (i) year and (ii) month or smaller (e.g. week) increment. If the date is in a code that is not readily understandable to the layperson, the manufacturer shall immediately, on request, provide the code to the Energy Commission.

(c) Exceptions to Section 1607(b).

(1) For plumbing fixtures and plumbing fittings, the information required by Section 1607(b) shall be permanently, legibly, and conspicuously displayed on an accessible place on each unit or on the unit's packaging.

(2) For lamps, the information required by Section 1607(b) shall be permanently, legibly, and conspicuously displayed on an accessible place on each unit, on the unit's packaging, or, where the unit is contained in a group of several units in a single package, on the packaging of the group.

(3) For fluorescent lamp ballasts, the date of manufacture information required by Section 1607(b)(3) shall indicate (i) year and (ii) three-month or smaller increment. If the date is in a code that is not readily understandable to the layperson, the manufacturer shall immediately, on request, provide the code to the Energy Commission.

(d) Energy Performance Information.

(1) **Federally-Regulated Consumer Products.**

The marking required by 16 CFR Part 305 (2008) shall be displayed on all units of all federally-regulated consumer products of the following classes:

Refrigerators
Refrigerator-freezers
Freezers
Central air conditioners
Heat pumps
Dishwashers
Water heaters
Room air conditioners
Warm air furnaces
Pool heaters
Clothes washers
Clothes dryers
Fluorescent lamp ballasts
Showerheads
Faucets
Water closets
Urinals
General service fluorescent lamps
General service incandescent reflector lamps
General service incandescent (other than reflector) lamps
Medium-base compact fluorescent lamps
Ceiling fans.

(2) **Federally-Regulated Commercial and Industrial Equipment.** Each unit of an appliance listed in Table Y that is federally-regulated commercial and industrial equipment shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, with the applicable energy performance information shown in Table Y, and such information shall also be included on all printed material that is displayed or distributed at the point of sale.

Table Y
Requirements for Marking of Federally-Regulated Commercial and Industrial Equipment

Class	*Energy Performance Information*
Split system central air conditioners (on printed material only)	Cooling capacity, SEER, EER
Single package central air conditioners	Cooling capacity, SEER, EER
Split system heat pumps (on printed material only)	Cooling capacity, heating capacity, SEER, EER, HSPF, COP
Single package heat pumps	Cooling capacity, heating capacity, SEER, EER, HSPF, COP
Package terminal air conditioners	Cooling capacity, EER
Package terminal heat pumps	Cooling capacity, heating capacity, EER, COP
Warm air furnaces	Input rating, thermal efficiency
Packaged boilers	Input rating, thermal efficiency, combustion efficiency (combustion efficiency marking requirement applies only to boilers with input ratings greater than 2,500,000 Btu/h.)
Water heaters	Input rating, rated storage volume, measured storage volume, thermal efficiency, standby loss (%/hr), standby loss (Btu/hr)
Hot water supply boilers	Rated input, rated storage volume, measured storage volume, thermal efficiency, standby loss

(3) **Air Conditioners, Heat Pumps, Furnaces, Boilers, and Water Heaters.** Each unit of air conditioners, heat pumps, furnaces, boilers, and water heaters that are not subject to NAECA and that comply with the provisions in Tables 6.8.1 A through F of ANSI/ASHRAE/IESNA Standard 90.1-2007 shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, with a statement that the equipment complies with the requirements of ASHRAE Standard 90.1.

(4) **Distribution Transformers.** Each unit of distribution transformers shall comply with the labeling requirements of NEMA Standard TP3-2000.

(5) **Illuminated Exit Signs.** Each unit of illuminated exit signs meeting the criteria of Section 1605.1(l) that are sold in California (subject to the limitations of Section 1601) shall be marked by the manufacturer with a block E inside a circle; the mark commonly referred to as "Circle E." The size of the mark shall be commensurate with other markings on the sign, but not smaller than ¼". Signs not meeting 1605.1 (l) shall not be so marked.

(6) **Luminaires.** Each unit of torchieres and each package containing a torchiere shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/8" on the inner surface of the reflector bowl of the torchiere, and ¼" on the packaging, "LAMPS MUST TOTAL NO MORE THAN 190 WATTS-TORCHIERE IS NON-COMPLIANT IF IT IS ABLE TO DRAW MORE THAN 190 WATTS."

(7) **Ceiling Fans.** Each package containing a ceiling fan whose diameter exceeds 50 inches shall be marked, permanently and legibly on an accessible and conspicuous place on the unit's packaging, in characters no less than ¼", the unit's airflow at high, medium, and low speed in CFM, and the unit's air flow efficiency in CFM/watt at high, medium and low speed.

(8) **Commercial Pre-Rinse Spray Valves.** Each unit of commercial pre-rinse spray valves shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than 1/8", the flow rate of the unit, in gallons-per minute (gpm) at 60 psi.

(9) **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.

(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.

(10) **Residential Pool Pumps.**

(A) Each residential pool pump shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the nameplate HP of the pump.

(B) Each residential pool pump motor shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", the pool pump motor capacity of the motor.

(C) Two-, multi-, or variable-speed residential pool pumps certified under Section 1606 of this Article on or after January 1, 2010 shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters no less than ¼", "This pump must be installed with a two-, multi-, or variable-speed pump motor controller."

(11) **Televisions.**

*Note: the subdivision A and B below are no longer effective due to state statutory and federal regulatory actions.

(A) Each television shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters of equal size to the largest font used within the menu screen within the television's built in menu, the on mode power consumption, in watts, as determined using the test method in Section 1604(v)(3) of this Article and filed under the requirements found in Section 1606(a)(3)(D) of this Article.

[*Note: This subdivision is no longer effective due to changes in state and federal law. (See Public Resources Code section 25213, subdivision (b), and 16 Code of Federal Regulations section 305.17).]

(B) Any publication, website, document, or retail display that is used for sale or offering for sale of a television manufactured on or after January 1, 2011 and which includes a description of the physical dimensions of the television shall

include the identical on mode power consumption, in watts, immediately following and in the same font and same font size as the description of the physical dimensions, as filed under the requirements found in Section 1606(a)(3)(D) of this Article.

[*Note: This subdivision is no longer effective due to changes in state and federal law. (See Public Resources Code section 25213, subdivision (b), and 16 Code of Federal Regulations section 305.20, subdivisions (g) and (h)).]

(12) **Battery Charger Systems.** Each battery charger system shall be marked with a "BC" inside a circle. The marking shall be legible and permanently affixed to:

(A) the product nameplate that houses the battery charging terminal or;

(B) the retail packaging and, if included, the cover page of the instructions.

(13) **Emergency Lighting and Self-Contained Lighting Controls.** All occupant sensing devices which utilize microwave radiation for detection of occupants shall be marked with an approved Federal Communications Commission identifier. In addition, such devices must have permanently affixed installation instructions recommending that the device be installed at least 12 inches from any area normally used by room occupants.

The following standards are incorporated by reference in Section 1607.

Number	Title
FEDERAL MARKING REQUIREMENTS	
CFR, Title 16, Part 305 (2008)	
Copies available from:	Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402 www.gpoaccess.gov/cfr/
	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

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

ANSI/ASHRAE/IESNA 90.1-2007	Energy Standard for Buildings Except Low-Rise Residential Buildings
Copies available from:	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle N.E. Atlanta, GA 30329 www.ashrae.org Phone: (800) 527-4723 (U.S./Canada) or (404) 636-8400 FAX: (404) 321-5478

NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION (NEMA)

NEMA TP3-2000	Standard for the Labeling of Distribution Transformer Efficiency
Copies available from:	National Electric Manufacturers Association 1300 N. 17th Street, Suite 1847 Rosslyn, VA 22209 www.nema.org Phone: (703) 841-3200 FAX: (703) 841-3300

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 1608. Compliance, Enforcement, and General Administrative Matters.

(a) General Requirements for the Sale or Installation of All Appliances.

Any unit of any appliance within the scope of Section 1601 may be sold or offered for sale in California only if:

(1) the appliance appears in the most recent database established pursuant to Section 1606(c), unless the only reason for the appliance's absence from the database is its failure to comply with an applicable standard in Section 1605.1;

(2) the manufacturer has:

(A) tested the appliance as required by Sections 1603 and 1604;

(B) marked the unit as required by Section 1607;

(C) for any appliance for which there is an applicable standard in Section 1605.2 or 1605.3, certified under Section 1606(a) that the appliance complies with the standard;

(3) the unit has the same components, design characteristics, and all other features that affect energy or water consumption or energy or water efficiency, as applicable, as the units that were tested under Sections 1603 and 1604 and for which information was submitted under Section 1606(a); and

(4) for any appliance for which there is an applicable standard in Section 1605.2 or 1605.3, the unit complies with the standard.

EXCEPTIONS. Sections 1608(a)(1) and 1608(a)(2)(C) are not applicable to:

1. non-commercial cooking products until, as determined by the Executive Director, there takes effect a federal standard or a federal reporting requirement for annual cooking energy consumption or for a similar measure of energy performance, and
2. power supplies, and
3. refrigerators without doors and freezers without doors that are not specifically designed for display and sale of bottled or canned beverages, and
4. walk-in coolers and walk-in freezers, and
5. low-profile ceiling fans.

(b) Appliances Not in Database.

If the Executive Director determines that an appliance that is not in the database is being sold or offered for sale in California, he or she shall take appropriate legal action to restrain and discourage such sale or offering, including, but not limited to testing units of the appliance at the manufacturer’s cost and seeking appropriate judicial action.

(c) All Appliances: Submittal of Reports of Manufacturers’ Certification Testing.

(1) For any appliance, the Executive Director may at any time request from a manufacturer a copy of the test report that describes the results of the testing that was performed

pursuant to Section 1604 and that provides the basis for the information submitted under Section 1606(a)(3)(D). The request shall be sent to the address or e-mail address designated in Section 1606(a)(2)(B). If the appliance is a commercial refrigerator, commercial refrigerator-freezer, commercial freezer, large storage water heater, or plumbing fitting, or if the Executive Director includes with the request information that, in his or her opinion, constitutes substantial evidence that the appliance or the manufacturer is not in compliance with an applicable provision of this Article, or that the energy or water performance of the appliance is not as certified under Section 1606(a)(3)(D) or is not as required by an applicable standard in Section 1605.1, 1605.2, or 1605.3, then the manufacturer shall provide a copy of the applicable test report to the Executive Director within 5 days of the manufacturer's receipt of the request.

(2) If the Executive Director does not receive the test report within the required time, the Executive Director shall remove the appliance from the database.

(3) If the test report indicates that the energy or water consumption of the appliance is greater than, or the energy or water efficiency of the appliance is less than, the consumption or efficiency certified by the manufacturer pursuant to Section 1606(a)(3)(D), the Executive Director shall, after providing written notice by certified mail (registered mail to non-U.S. destinations) to the person designated in Section 1606(a)(2)(B), modify the listing of the appliance in the database to reflect accurately the test report.

(4) If the test report indicates that the appliance model does not comply with an applicable standard in Section 1605.1, 1605.2, or 1605.3, the Executive Director shall, ten days after providing written notice by certified mail (registered mail to non-U.S. destinations) to the person designated in Section 1606(a)(2)(B), remove the model from the database.

(d) Inspection by the Executive Director of Appliances Subject to Energy Design and Water Design Standards, and Marking Requirements.

(1) The Executive Director shall periodically inspect appliances sold or offered for sale in the state, to determine whether they conform with the applicable energy design and water design standards of Sections 1605.1, 1605.2, and 1605.3, and with the applicable marking requirements of Section 1607.

(2) Inspection of an appliance shall consist of inspection of one unit.

(A) If the inspection indicates that the unit complies with the applicable energy or water design standards and marking requirements, the matter shall be closed.

(B) If the inspection indicates that the unit does not comply with an applicable energy or water design standard or as applicable marking requirement, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the manufacturer's option, pursuant to Sections 11425.10-11425.60 of the California Government Code). If the Commission confirms the Executive Director's determination, then he or she shall remove the appliance from the database.

(e) Executive Director's Enforcement Testing of Appliances Subject to Energy Efficiency, Energy Consumption, Water Efficiency, and Water Consumption Standards.

The Executive Director shall periodically cause, at laboratories meeting the criteria of Section 1603(a), the testing of appliance units sold or offered for sale in the state, to determine whether the appliances conform with the applicable standards in Sections 1605.1, 1605.2, and 1605.3, and to determine whether their performance is as reported or certified by the manufacturer pursuant to Section 1606(a). Testing shall be performed as follows:

(1) **Initial Test.** The Executive Director shall perform an initial test on one unit, using the applicable test procedure specified in Section 1604. Upon completion of the initial test, the Executive Director shall make a determination as follows:

(A) **Performance Is No Worse Than Required by Standards and Is No Worse Than as Certified by Manufacturer.** If the initial test result indicates that the energy and water consumption of the unit is no greater than, and the energy and water efficiency of the unit is no less than, the consumption or efficiency that is permitted and required by all applicable standards in Section 1605.1, 1605.2, or 1605.3, and that was certified by the manufacturer pursuant to Section 1606(a), the matter shall be closed.

(B) **Performance Is Worse Than Required by Standard or Is Worse Than as Certified by Manufacturer.** If the initial test result indicates that the energy or water consumption of the unit is greater, or the energy or water efficiency of the unit is less, than the consumption or efficiency that is permitted or required by any applicable standard in Section 1605.1, 1605.2, or 1605.3, or that was certified by the manufacturer pursuant to Section 1606(a), the Executive Director shall perform a second test on a second unit, using the applicable test procedure specified in Section 1604.

(2) **Second Test; Mean of Results.** If a second test is performed, the Executive Director shall calculate the mean of the results of the initial test and the second test. Upon completion of the second test, the Executive Director shall inform the manufacturer of the results and shall make a determination as follows:

(A) **Performance Is No Worse Than Required by Standards and Is No Worse Than as Certified by Manufacturer.** If the two test results indicate that the mean energy and water consumption of the two units is no greater than, and the mean energy and water efficiency of the two units is no less than, the consumption and efficiency permitted or required by all applicable standards in Section 1605.1, 1605.2, or 1605.3, and that was certified by the manufacturer pursuant to Section 1606(a), the matter shall be closed.

(B) **Performance is as Required by Standard but is Worse Than as Certified by Manufacturer.** If the two test results indicate that the mean energy or water consumption of the two units is greater than, or the mean energy or water efficiency of the two units is less than, the consumption or efficiency that was certified by the manufacturer pursuant to Section 1606(a), but that the mean result nevertheless complies with all applicable standards in Section 1605.1, 1605.2, or 1605.3, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the

manufacturer's option, pursuant to Sections 11425.10-11425.60 of the California Government Code). If the Commission determines that the two test results indicate that:

(1) the mean energy or water consumption of the two units is greater than, or the mean energy or water efficiency of the two units is less than, the consumption or efficiency as reported or certified by the manufacturer pursuant to Section 1606(a), and

(2) the mean result nevertheless complies with all applicable standards in Section 1605.1, 1605.2, or 1605.3, then the Executive Director shall modify the listing of the appliance in the database to reflect accurately the Commission's determination.

(C) **Performance is Not As Required by Standard.** If the two test results indicate that the mean energy or water consumption of the two units is greater than, or the mean energy or water efficiency of the two units is less than, any applicable standard in Section 1605.1, 1605.2, or 1605.3, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the California Government Code (or, at the manufacturer's option, Sections 11425.10-11425.60 of the California Government Code). If the Commission determines that the mean energy or water consumption of the two units is greater than, or the mean energy or water efficiency of the two units is less than any applicable standard, the Executive Director shall remove the appliance from the database established pursuant to Section 1606(c).

(3) **Optional Method of Determining Energy or Water Performance.** If, at any time before a Commission determination under Section 1608(e)(2)(B) or 1608(e)(2)(C), the manufacturer so chooses, instead of using the mean-of-two-units approach set forth in Sections 1608(e)(1) and 1608(e)(2), the Executive Director shall test the appliance using the sampling method set forth in 10 CFR Part 430, Appendix B to Subpart F (2008) or 10 CFR Part 431, Appendix A to Subpart K (2008), and shall make the determinations under Sections 1608(e)(1) and 1608(e)(2) based on those test results. The manufacturer shall pay for all such testing.

(f) Costs.

Except as otherwise provided in this Article, all costs of initial tests showing results as described in Section 1608(e)(1)(A) or Section 1608(e)(2)(A) shall be borne by the Commission. All costs of all other tests shall be paid by the manufacturer.

(g) Federally-Regulated Appliances.

If:

(1) the appliance tested is a federally-regulated consumer product or federally-regulated commercial and industrial equipment; and

(2) either:

(A) the test results show that the appliance does not comply with an applicable federal standard or other applicable federal requirement; or

(B) the test results are at variance with the results reported by the manufacturer to the U.S. Department of Energy or the U.S. Federal Trade Commission; then, in addition to taking the applicable actions described in Sections 1608(e)(1) and 1608(e)(2), the Executive Director shall inform the appropriate federal agency.

(h) Forms and Formats Specified by Executive Director.

The Executive Director may specify, and require the use of, any particular form or format for the submittal of any data, reports, or other information required by this Article, including but not limited to computer programs or formats.

(i) Executive Director Determinations.

Whenever this Article refers to a finding, conclusion, or other determination by the Executive Director, any person seeking such a determination shall submit to the Executive Director a written request. Within 10 days of receipt of a request, the Executive Director shall either find the request is complete and so inform the applicant, or return the request to the applicant with a statement of what additional information is necessary to make it complete. Within 21 days of receipt of a complete request, the Executive Director shall make a determination, which shall be within the discretion of the Executive Director acting on the basis of the entire record, which shall be assembled and made publicly available by the Executive Director. Within 10 days of a determination, whether made in response to a request or made on the Executive Director's own initiative, any affected person, including but not limited to the person, if any, who made a request for the determination, may appeal the determination to the Commission in writing. At the same time that the appeal is filed, the appellant shall file all the evidence the appellant wishes the Commission to consider. The Commission Staff and any affected person shall file all the evidence they wish the Commission to consider within 20 days after the appeal is filed. The Commission shall hear and decide the appeal at the next regularly-scheduled business meeting that is at least 30 days after the appeal is filed. At the hearing the Commission may require the filed evidence to be presented under oath and may allow questions and cross-examination from participants.

The following standards are incorporated by reference in Section 1608.

Number	Title
FEDERAL SAMPLING METHOD	
CFR, Title 10, Part 430, Appendix B to Subpart F (2008)	
CFR, Title 10, Part 431, Appendix A to Subpart K (2008)	

Copies available from: Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
www.gpoaccess.gov/cfr/

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.