

Model Act for Establishing State Appliance and Equipment Energy Efficiency Standards

*Prepared by the
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Version for 2006 and 2007 legislative sessions (Updated, July 2006)

This model act sets specific, up-to-date standards for selected commercial and residential products. Sources for these standards include the most recent standards adopted by various states and the U.S. government's *Energy Star*TM. If you have questions regarding this model act, contact Andrew deLaski at the Appliance Standards Awareness Project by phone at (617) 363-9470 or email at <adelaski@standardsASAP.org>.

An Act Establishing Minimum Energy Efficiency Standards for Certain Products Sold in the State

Section 1. General Purpose.

This Act establishes minimum efficiency standards for certain products sold or installed in the state.

Section 2. Findings.

The legislature finds that:

- (a) Efficiency standards for certain products sold or installed in the state assure consumers and businesses that such products meet minimum efficiency performance levels thus saving money on utility bills.
- (b) Such efficiency standards save energy and thus reduce pollution and other environmental impacts associated with the production, distribution, and use of electricity, natural gas and oil.
- (c) Such efficiency standards can make electricity systems more reliable by reducing the strain on the electricity grid during peak demand periods. Furthermore, improved energy efficiency can reduce or delay the need for new power plants, power transmission lines, and power distribution system upgrades.
- (d) Energy efficiency standards contribute to the economy of this state by helping to better balance energy supply and demand, thus reducing pressure for higher natural gas and electricity prices. By saving consumers and businesses money on energy bills, efficiency standards help the state and local economy, since energy bill savings can be spent on local goods and services.

Section 3. Definitions.

As used in this Act:

- (a) “Ballast” means a device used with an electric discharge lamp to obtain necessary circuit conditions (voltage, current and waveform) for starting and operating the lamp.
- (b) “Bottle-type water dispenser” means a water dispenser that uses a bottle or reservoir as the source of potable water.
- (c) “Commissioner” means the [**Commissioner of Consumer Protection or the head of another appropriate implementing agency**].
- (d) “Commercial hot food holding cabinet” means a heated, fully-enclosed compartment with one or more solid or 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 merchandizing cabinets, drawer warmers, or cook-and-hold appliances.
- (e) “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.
- (f) “Compensation” means money or any other valuable thing, regardless of form, received or to be received by a person for services rendered.
- (g) “Digital versatile disc” and “DVD” mean a laser-encoded plastic medium capable of storing a large amount of digital audio, video, and computer data.
- (h) “Digital versatile disc player” and “digital versatile disc recorder” mean commercially-available electronic products encased in a single housing that includes an integral power supply and for which the sole purpose is, respectively, (1) the decoding and (2) production or recording of digitized video signal on a DVD. “DVD recorder” does not include models that have an electronic programming guide function that provides an interactive, onscreen menu of television listings, and that downloads program information from the vertical blanking interval of a regular television signal.
- (i) “Electricity ratio” is the ratio of furnace electricity use to total furnace energy use. Electricity ratio = $(3.412 * E_{AE}) / (1000 * E_F + 3.412 * E_{AE})$ where E_{AE} (average annual auxiliary electrical consumption) and E_F (average annual fuel energy consumption) are defined in Appendix N to subpart B of part 430 of title 10 of the Code of Federal Regulations and E_F is expressed in millions of Btus per year.
- (j) “High-intensity discharge lamp” means a lamp in which light is produced by the passage of an electric current through a vapor or gas and in which the light-producing arc is stabilized by bulb wall temperature and the arc tube has a bulb wall loading in excess of three watts per square centimeter.
- (k) “Medium voltage dry-type distribution transformer” means a transformer that: (1) has an input voltage of more than 600 volts but less than or equal to 34,500 volts; (2)

is air-cooled; (3) does not use oil as a coolant; and (4) is rated for operation at a frequency of 60 Hertz.

- (l) “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.
- (m) “Metal halide lamp fixture” means a light fixture designed to be operated with a metal halide lamp and a ballast for a metal halide lamp.
- (n) “Portable electric spa” means a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water.
- (o) “Probe-start metal halide ballast” means a ballast used to operate metal halide lamps, which does not contain an igniter and which instead starts lamps by using a third starting electrode probe in the arc tube.
- (p) “Residential boiler” means a self-contained low-pressure appliance for supplying steam or hot water primarily designed for space heating, which uses natural gas, propane, or home heating oil, and which has a heat input rate of less than 300,000 Btu per hour.
- (q) “Residential furnace” means a self-contained space heater designed to supply heated air through ducts of more than 10 inches length and which utilizes only single-phase electric current, or single-phase electric current or DC current in conjunction with natural gas, propane, or home heating oil, and which –
 - (1) is designed to be the principle heating source for the living space of one or more residences;
 - (2) is not contained within the same cabinet with a central air conditioner whose rated cooling capacity is above 65,000 Btu per hour; and
 - (3) has a heat input rate of less than 225,000 Btu per hour.
- (r) “Residential pool pump” means a pump used to circulate and filter residential swimming pool water in order to maintain clarity and sanitation.
- (s) “Single-voltage external AC to DC power supply” means a device that:
 - (1) is designed to convert line voltage AC input into lower voltage DC output;
 - (2) is able to convert to only one 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 power 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, including those that are removable, that physically attach directly to the power supply unit;
 - (7) does not have a battery chemistry or type selector switch and indicator light; or does not have a battery chemistry or type selector switch and a state of charge meter; and
 - (8) has a nameplate output power less than or equal to 250 watts.
- (t) “State-regulated incandescent reflector lamp” means a lamp, not colored or designed for rough or vibration service applications, with an inner reflective coating on the outer bulb to direct the light, an E26 medium screw base, a rated voltage or voltage range that lies at least partially within 115 to 130 volts, and that falls into either of the following categories: a blown PAR (BPAR), bulged reflector (BR), elliptical reflector (ER) or similar bulb shape with a diameter equal to or greater than 2.25 inches; or a

reflector (R), parabolic aluminized reflector (PAR) or similar bulb shape with a diameter of 2.25 to 2.75 inches, inclusive.

- (u) “Temperature reset” means an automatic means for adjusting the temperature of the water supplied by a residential boiler such that an incremental change in inferred heat load produces a corresponding incremental change in supply water temperature. When there is no inferred heat load, such automatic means adjusts the supply water temperature to no more than 140 degrees F.
- (v) “Transformer” means a device consisting of two or more coils of insulated wire and that is designed to transfer alternating current by electromagnetic induction from one coil to another to change the original voltage or current value. This term does not include: (1) devices with multiple voltage taps, with the highest voltage tap equaling at least 20 percent more than the lowest voltage tap; or (2) devices, such as those commonly known as drive transformers, rectifier transformers, auto-transformers, Uninterruptible Power System transformers, impedance transformers, regulating transformers, sealed and non-ventilating transformers, machine tool transformers, welding transformers, grounding transformers, or testing transformers, that are designed to be used in a special purpose application and are unlikely to be used in general purpose applications.
- (w) “Walk-in refrigerator” and “walk-in freezer” mean a space designed for the storage or marketing of food, beverages or ice refrigerated to temperatures, respectively, at or above and below 32 degrees F that can be walked into.
- (x) “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.

Section 4. Scope.

- (a) The provisions of this Act apply to the following types of new products sold, offered for sale, or installed in the state:
 - (1) bottle-type water dispensers;
 - (2) commercial hot food holding cabinets;
 - (3) compact audio products;
 - (4) digital versatile disc players and digital versatile disc recorders;
 - (5) medium voltage dry-type distribution transformers;
 - (6) metal halide lamp fixtures;
 - (7) portable electric spas;
 - (8) residential furnaces and residential boilers;
 - (9) residential pool pumps;
 - (10) single-voltage external AC to DC power supplies;
 - (11) state-regulated incandescent reflector lamps;
 - (12) walk-in refrigerators and walk-in freezers; and
 - (13) any other products as may be designated by the Commissioner in accordance with Section 7.
- (b) The provisions of this Act do not apply to –
 - (1) new products manufactured in the state and sold outside the state;

- (2) new products manufactured outside the state and sold at wholesale inside the state for final retail sale and installation outside the state;
- (3) products installed in mobile manufactured homes at the time of construction; or
- (4) products designed expressly for installation and use in recreational vehicles.

Section 5. Efficiency standards.

(a) Not later than one year after the date of enactment of this act, the Commissioner, in consultation with **[heads of other appropriate agencies]** shall adopt regulations, in accordance with the provisions of chapter **[number of section in state law dealing with setting regulations]**, establishing minimum efficiency standards for the types of new products set forth in Section 4.

- (b) The regulations shall provide for the following minimum efficiency standards:
- (1) Bottle-type water dispensers designed for dispensing both hot and cold water shall not have standby energy consumption greater than 1.2 kilowatt-hours per day, as measured in accordance with the test criteria contained in version 1 of the U.S. Environmental Protection Agency's "Energy Star Program Requirements for Bottled Water Coolers," except units with an integral, automatic timer shall not be tested using Section D, "Timer Usage," of the test criteria.
 - (2) Commercial hot food holding cabinets shall have a maximum idle energy rate of 40 watts per cubic foot of interior volume, as determined by the "idle energy rate-dry test" in ASTM F2140-01, "Standard Test Method for Performance of Hot Food Holding Cabinets" published by ASTM International. Interior volume shall be measured in accordance with the method shown in the U.S. Environmental Protection Agency's "Energy Star Program Requirements for Commercial Hot Food Holding Cabinets" as in effect on August 15, 2003.
 - (3) Compact audio products shall not use more than 2 watts in standby-passive mode for those without a permanently illuminated clock display and 4 watts in standby-passive mode for those with a permanently illuminated clock display, as measured in accordance with International Electrotechnical Commission (IEC) test method 62087:2002(E), "Methods of measurement for the power consumption of audio, video, and related equipment."
 - (4) Digital versatile disc players and digital versatile disc recorders shall not use more than 3 watts in standby-passive mode, as measured in accordance with International Electrotechnical Commission (IEC) test method 62087:2002(E), "Methods of measurement for the power consumption of audio, video, and related equipment."
 - (5) Medium voltage dry-type distribution transformers shall meet minimum efficiency levels three-tenths of a percentage point higher than the Class 1 efficiency levels for medium voltage distribution transformers specified in Table 4-2 of the "Guide for Determining Energy Efficiency for Distribution Transformers" published by the National Electrical Manufacturers Association (NEMA Standard TP-1-2002).
 - (6) 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 shall not contain a probe-start metal halide ballast.
 - (7) Portable electric spas shall not have a standby power greater than $5(V^{2/3})$ Watts where V=the total volume in gallons **[This is a superscript because it means "V to**

the two-thirds power”.], as measured in accordance with the test method for portable electric spas contained in section 1604, title 20, California Code of Regulations.

(8) (i) Residential furnaces and residential boilers shall comply with the following Annual Fuel Utilization Efficiency (AFUE), electricity ratio and design requirements:

Product Type	Minimum AFUE	Maximum electricity ratio	Design requirements
Natural gas- and propane-fired furnaces	90%	2.0%	none
Oil-fired furnaces \geq 94,000 Btu/hour in capacity	83%	2.0%	none
Oil-fired furnaces $<$ 94,000 Btu/hour in capacity	83%	2.3%	none
Natural gas- and propane-fired hot water residential boilers	82%	Not applicable	No standing pilot Temperature reset required
Natural gas- and propane-fired steam residential boilers	80%	Not applicable	No standing pilot
Oil-fired hot water residential boilers	84%	Not applicable	Temperature reset required
Oil-fired steam residential boilers	82%	Not applicable	none

Residential boilers shall only be operable if the temperature reset is installed. AFUE shall be measured in accordance with the federal test method for measuring the energy consumption of furnaces and boilers contained in Appendix N to subpart B of part 430, title 10, Code of Federal Regulations.

(ii) The Commissioner may adopt rules to exempt compliance with the forgoing residential furnace or residential boiler AFUE standards at any building, site or location where complying with said standards would be in conflict with any local zoning ordinance, building or plumbing code, or other rule regarding installation and venting of residential furnaces or residential boilers.

(9)(i) Residential pool pump motors may not be split-phase or capacitor start-induction run type motors.

(ii) Pool pump motors with a capacity of 1 horsepower or more 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. Pool pump motor controls shall have the capability of operating the pool pump at at least two speeds. The default circulation speed shall be the lowest speed, with a high speed override capability being for a temporary period not to exceed one normal cycle.

(10) Single-voltage external AC to DC power supplies shall meet the energy efficiency requirements in the following table:

Nameplate Output Power	Minimum Efficiency in Active Mode
0 to < 1 watt	0.49 * Nameplate Output
≥1 watt and ≤49 watts	0.09*Ln(Nameplate Output Power) + 0.49
> 49 watts	0.84
	Maximum Energy Consumption in No-Load Mode
0 to < 10 watts	0.5 watts
≥ 10 watts and ≤250 watts	0.75 watts
Where Ln (Nameplate Output) = Natural Logarithm of the nameplate output expressed in watts	

(ii) This standard applies to single voltage AC to DC power supplies that are sold individually and to those that are sold as a component of or in conjunction with another product.

(iii) Single voltage external AC to DC power supplies that require U.S. Food and Drug Administration listing and approval as a medical device are exempt from the requirements of this section.

(iv) Single voltage external AC to DC power supplies 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 of this section until January 1, 2013.

(v) For purposes of this paragraph, the efficiency of single-voltage external AC to DC power supplies shall be measured in accordance with the test methodology specified by the U.S. Environmental Protection Agency’s Energy Star Program, “Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies (August 11, 2004)” except that tests shall be conducted at 115 volts only.

(11)(i) State-regulated incandescent reflector lamps shall meet the minimum average lamp efficacy requirements for federally-regulated incandescent reflector lamps contained in 42 U.S. Code 6295 (i)(1)(A).

(ii) The following types of incandescent reflector lamps are exempt from these requirements:

(I) lamps rated at 50 watts or less of the following types: BR30, ER30, BR40, and ER40;

(II) lamps rated at 65 watts of the following types: BR30, BR40, and ER40; and

(III) R20 lamps of 45 watts or less.

(12) Walk-in refrigerators and walk-in freezers shall meet the requirements in paragraphs (i) and (ii).

(i) Walk-in refrigerators and walk-in freezers shall meet the following specifications:

- (A) Have automatic door closers that firmly close all reach-in doors. Have automatic door closers that firmly close all walk-in doors that have been closed to within one inch of full closure. This requirement does not apply to walk-in doors wider than 3 feet 9 inches or higher than 6 feet 11 inches.
 - (B) Contain wall, ceiling and door insulation of at least R-28 for coolers and R-32 for freezers. Door insulation requirements do not apply to glazed portions of doors, nor to structural members.
 - (C) Contain floor insulation of at least R-28 for freezers.
 - (D) Use electronically commutated motors for single-phase evaporator fan motors of under one horsepower and less than 460 volts. This requirement takes effect Jan. 1, 2009, unless, prior to this date, the Secretary determines that such motors are only available from one manufacturer. The Secretary may also allow other types of motors if the Secretary determines that, on average, these other motors use no more energy in evaporator fan applications than electronically commutated motors.
 - (E) For condenser fan motors of under one horsepower, use either: (a) electronically commutated motors, (b) permanent split capacitor-type motors, or (c) polyphase motors of one-half (1/2) horsepower or more.
 - (F) For all interior lights, use light sources with an efficacy of 45 lumens per watt or more, including ballast losses (if any). Light sources with an efficacy of 45 lumens per watt 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 is not occupied. LED light sources are exempted from the efficacy requirement until January 1, 2010.
- (ii) Walk-in refrigerators and walk-in freezers with transparent reach-in doors shall also meet the following specifications:
- (A) Transparent reach-in doors and windows in walk-in doors for walk-in freezers 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 doors shall be either (a) double-pane glass with heat-reflective treated glass and gas fill or (b) triple pane glass with either heat-reflective treated glass or gas fill.
 - (C) 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 7.1 watts per square foot of door opening (freezers) and 3.0 watts per square foot of door opening (coolers).
 - (D) 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 7.1 watts per square foot of door opening (freezers) and 3.0 watts per square foot of door opening (coolers), 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.

Section 6. Implementation.

(a)(1) On or after January 1, 2008, no new bottle-type water dispenser, commercial hot food holding cabinet, compact audio product, digital versatile disc player or digital versatile disc recorder, medium voltage dry-type distribution transformer, metal halide lamp fixture, residential pool pump, portable electric spa, state-regulated incandescent reflector lamp, single-voltage external AC to DC power supply, or walk-in refrigerator or walk-in freezer may be sold or offered for sale in the state unless the efficiency of the new product meets or exceeds the efficiency standards set forth in the regulations adopted pursuant to Section 5.

(2) Notwithstanding the provisions of (a)(1), residential pool pumps that do not meet the efficiency standards contained in paragraph (b)(9)(ii) of section 5 may be sold in the state until January 1, 2010.

(b) No later than six months after the date of enactment of this act, the commissioner, in consultation with the Attorney General, shall determine if implementation of state standards for residential furnaces and residential boilers require a waiver from federal preemption. If the commissioner determines that a waiver from federal preemption is not needed, then on or after January 1, 2008, or the date which is one year after the date of said determination, if later, no new residential furnace or residential boiler may be sold or offered for sale in the state unless the efficiency of the new product meets or exceeds the efficiency standards set forth in the regulations adopted pursuant to Section 5. If the Commissioner determines that a waiver from federal preemption is required, then the Commissioner shall apply for such waiver within one year of such determination and upon approval of such waiver application, the applicable state standards shall go into effect at the earliest date permitted by federal law.

(c) One year after the date upon which the sale or offering for sale of certain products becomes subject to the requirements of paragraph (a) or (b) of this section, no such products may be installed for compensation in the state unless the efficiency of the new product meets or exceeds the efficiency standards set forth in the regulations adopted pursuant to Section 5.

Section 7. New and revised standards.

The Commissioner may adopt regulations, in accordance with the provisions of chapter **[number of section in state law dealing with setting regulations]**, to establish increased efficiency standards for the products listed in Section 4. The Commissioner may also establish standards for products not specifically listed in Section 4. In considering such new or amended standards, the Commissioner, in consultation with the **[heads of other appropriate departments]**, shall set efficiency standards upon a determination that increased efficiency standards would serve to promote energy conservation in the state and would be cost-effective for consumers who purchase and

use such new products, provided that no new or increased efficiency standards shall become effective within one year following the adoption of any amended regulations establishing such increased efficiency standards. The Commissioner may apply for a waiver of federal preemption in accordance with federal procedures (42 U.S. Code 6297 (d)) for state efficiency standards for any product regulated by the federal government.

Section 8. Testing, certification, labeling and enforcement.

(a) The manufacturers of products covered by this Act shall test samples of their products in accordance with the test procedures adopted pursuant to this Act or those specified in the State Building Code. The Commissioner, in consultation with **[heads of other appropriate departments]**, shall adopt by rule test procedures for determining the energy efficiency of the products covered by Section 4 if such procedures are not provided for in section 5 of this Act or in **[the State Building Code]**. The Commissioner shall adopt U.S. Department of Energy approved test methods, or in the absence of such test methods, other appropriate nationally recognized test methods. The Commissioner may adopt updated test methods when new versions of test procedures become available.

(b) Manufacturers of new products covered by Section 4 of this Act, except for single voltage external AC to DC power supplies, walk-in refrigerators, and walk-in freezers, shall certify to the Commissioner that such products are in compliance with the provisions of this Act. Such certifications shall be based on test results. The Commissioner shall promulgate regulations governing the certification of such products and shall coordinate with the certification programs of other states and federal agencies with similar standards.

(c) Manufacturers of new products covered by Section 4 of this Act shall identify each product offered for sale or installation in the state as in compliance with the provisions of this Act by means of a mark, label, or tag on the product and packaging at the time of sale or installation. The Commissioner shall promulgate regulations governing the identification of such products and packaging, which shall be coordinated to the greatest practical extent with the labeling programs of other states and federal agencies with equivalent efficiency standards. The Commissioner shall allow the use of existing marks, labels, or tags which connote compliance with the efficiency requirements of this chapter.

(d) The Commissioner may test products covered by Section 4. If products so tested are found not to be in compliance with the minimum efficiency standards established under Section 5, the Commissioner shall: (1) charge the manufacturer of such product for the cost of product purchase and testing, and (2) make information available to the public on products found not to be in compliance with the standards.

(e) With prior notice and at reasonable and convenient hours, the Commissioner may cause periodic inspections to be made of distributors or retailers of new products covered by Section 4 in order to determine compliance with the provisions of this Act. The Commissioner shall also coordinate with the **[head of building code administration]**

regarding inspections prior to occupancy of newly constructed buildings containing new products that are also covered by the **[State Building Code]**.

(f) The Commissioner shall investigate complaints received concerning violations of this Act and shall report the results of such investigations to the Attorney General. The Attorney General may institute proceedings to enforce the provisions of this Act. Any manufacturer, distributor, or retailer, or any person who installs a product covered by this Act for compensation, who violates any provision of this Act shall be issued a warning by the Commissioner for any first violation. Repeat violations shall be subject to a civil penalty of not more than two hundred fifty dollars. Each violation shall constitute a separate offense, and each day that such violation continues shall constitute a separate offense. Penalties assessed under this paragraph are in addition to costs assessed under paragraph (d) of this section.

(g) The Commissioner may adopt such further regulations as necessary to insure the proper implementation and enforcement of the provisions of this Act.

Section 9. Severability of provisions.

The provisions of this Act shall be severable and if the application of any clause, sentence, paragraph, subdivision, section or part of this Act shall be adjudged by any court of competent jurisdiction to be invalid, such judgment shall not affect, impair, or invalidate the application of any other clause, sentence, paragraph, subdivision, section or part of this Act.