

CALIFORNIA ENERGY COMMISSION

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3/3/05

California Standards for External Power Supplies

Standards Requirements. On December 15, 2005 the California Energy Commission adopted appliance energy efficiency standards for power supplies that are sold or offered for sale in California, which are manufactured on or after July 1, 2006. These Standards apply to each single-voltage external AC to DC, or AC to AC power supply that meets the following conditions:

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 Commission's adopted *Appliance Efficiency Regulations* can be found at:

http://www.energy.ca.gov/appliances/documents/2005-03-01_EXPRESS_TERMS.PDF

The following information summarizes the requirements, with citations to the appropriate sections of the regulations.

Testing: Section 1604(u) of the regulations requires that all basic models of power supplies be tested using the US EPA "Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies" dated August 11, 2004. This test method can be found at:

http://www.energystar.gov/ia/partners/prod_development/downloads/power_supplies/ESupplyEffic_TestMethod_0804.pdf

In addition, Section 1603(a) requires that the testing be at a laboratory that the Commission's Executive Director has determined (under procedures specified in 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.

Efficiency Standards: Section 1605.3(u)(1) states:

The efficiency in the active mode of power supplies manufactured on or after the effective dates shall be not less than the applicable values shown (expressed as the decimal equivalent of a percentage); and the energy consumption in the no-load mode of power supplies manufactured on or after the effective dates shown shall be not greater than the applicable values shown in Table U-1 or Table U-2.

**Table U-1
Standards for Power Supplies
Effective July 1, 2006**

<i>Nameplate Output</i>	<i>Minimum Efficiency in Active Mode</i>
<1 watt	0.49 * Nameplate Output
=1 and = 49 watts	0.09 * Ln(Nameplate Output) + 0.49
> 49 watts	0.84
<i>Maximum Energy Consumption in No-Load Mode</i>	
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-2
Standards for Power Supplies
Effective January 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.	

Marking: Sections 1607(b) and (d)(9) require that each power supply must be marked as follows:

(1) “permanently, legibly, and conspicuously displayed on an accessible place”:

- manufacturer’s name, brand name, or trademark
- model number
- date of manufacturer, indicating (i) year and (ii) month or smaller increment; the date may be in code

(2) on the nameplate, in indelible, legible plain serif font, in a color contrasting with the nameplate background, one of the following (please see the example below):

- “III” if the model meets both of the 2006 standards (no-load and active mode) but not both of the 2008 standards; or
- “IV” if the model meets both of the 2008 standards (no-load and active mode).



Certification: The regulations adopted on December 15, 2004 do not require manufacturer certification (data-submittal) at this time (See Section 1606(a)). However, in adopting the regulations, the Commission directed its Efficiency Committee to continue the rulemaking and consider, among other things, "[w]hether there should be marking and data-reporting requirements for power supplies, and consumer audio and video equipment" and to take appropriate action as soon as possible. Thus, it is possible that there will be certification requirements when the efficiency standards take effect (or later).

Implementation/Enforcement Plans. Within the next two months the Commission expects to send a letter to all identified stakeholders, stating what is required for manufacturers of regulated power supplies manufactured on or after July 1, 2006 to show compliance with the *Appliance Efficiency Regulations*. The letter will include an application that testing laboratories can use to apply for the necessary determination by the Executive Director.

Under the compliance and enforcement provisions of Section 1608, shortly after July 1, 2006 the Energy Commission plans to undertake a survey to determine which regulated power supplies are being sold in California (either separately, or as part of other products), and if these power supplies are properly marked and comply with the appropriate efficiency standards.

Under the procedures in Section 1608, Commission staff would notify the identified manufacturers of power supplies found not in compliance (with either the efficiency standards or the marking requirements) of the legal requirements. Manufacturers who do not comply with the efficiency standards may be required to supply test reports or to have their products tested by the Energy Commission (including testing at the manufacturer's expense). The Commission will take appropriate action to bar the sale of non-complying products.

Questions:

Questions should be referred to either: Carolyn McCormack, (916) 653-8232 or Jim Holland, (916) 654-4091, or by email at appliances@energy.state.ca.us