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Proposed Regulatory Language

California Code of Regulations

Title 20. Public Utilities and Energy

Division 2. State Energy Resources Conservation and Development Commission

Chapter 4. Energy Conservation

Article 4. Appliance Efficiency Regulations

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

1602. Definitions.

…[skipping *(a)* through *(u)*]

(v) Computers, Computer Monitors, Televisions, Signage Displays, and Consumer Audio and Video Equipment.

…[skipping *Add-in card* through *Computer sleep mode*]

"Computer with cyclical behavior" means a notebook computer or portable all-in-one computer that periodically charges and discharges its battery while connected to a mains power source, creating power mode loads that are cyclical or pulsing in that they are stable for a period, often many minutes, and then the power varies over a cycle, making it necessary to measure at least one full charge and discharge cycle when determing the average power.

…[skipping *Desktop computer* through *Expandability score (ES)*]

"Fast refresh rate gaming monitor" means a gaming monitor with a supported refresh rate of 300Hz or more that includes incremental hardware-based assistance.

…[skipping *First discrete GPU* through *Monitor screen area*]

"Multi-screen notebook" means a computer that resembles a notebook computer, with a clam shell form factor and which has a secondary integrated display with touch and/or pen capability and that can be used as a touch screen keyboard in place of a mechanical keyboard.

…[skipping *Native resolution* through *Native vertical resolution*]

"Notebook computer" means a computer designed specifically for portability and to be operated for extended periods both with and without a direct connection to an AC mains power source. A notebook computer is sold with an integrated display and a physical keyboard. The term "notebook computer" includes two-in-one notebooks, mobile thin clients, multi-screen notebooks , and notebook computer models with touch-sensitive screens. Notebook computer does not include mobile workstations or mobile gaming systems.

…[skipping *On mode* through the end of section 1602]

Note: Authority cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015).

Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c), 25402.5.4, and 25960, Public Resources Code; and Section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

1604. Test Methods for Specific Appliances.

…[skipping (a)-(u)]

(v) Computers, Computer Monitors, Televisions, Signage Displays, and Consumer Audio and Video Equipment.

…[skipping *(1)-(3)*]

(4) Computers. The test method for computers is the ENERGY STAR Program Requirements for Computers, Final Test Method (Rev. March-2016), with the following modifications:

…[skipping *(A)-(I)*]

(J) For multi-screen notebooks, configure each integrated display in the same way as the display of the units with one integrated display. The displays do not have to be configured sequentially (i.e. warmup times can be done simultaneously for all integrated displays).

(K) For computers with cyclical behavior where operation without a battery pack when connected to the mains power source is not a supported configuration and where the normal measurement time would not capture one or more complete cycles, short-idle, long-idle, sleep, and off mode power measurements shall be tested in a modified manner from the test procedure described in IEC 62623:2012:

1. Short-idle mode testing: The short idle test duration shall be extended long enough to capture the energy consumption over one or more complete cycles.

The unit shall be kept in short idle through minimal user input such as moving the mouse or pressing a key that does not perform any action (e.g., shift, ctrl, tab, etc).

2. Long-idle mode testing: The long idle mode test duration shall be extended long enough to capture the energy consumption over one or more complete cycles. The unit under test shall remain in long idle during the entire time of the extended test by disabling the sleep mode.

3. Sleep mode testing: The computer sleep mode power shall be tested after restarting the computer and ensuring that the sleep mode is enabled. Instead of measuring power after manually entering sleep mode, the power measurement shall begin no sooner than 30 minutes and no later than 31 minutes of user inactivity on the unit under test. Sleep mode power measurement shall be taken over an extended period of time that is long enough to capture the energy consumption over one or more complete cycles.

4. Off mode testing: The off mode test duration shall be extended long enough to capture the energy consumption over one or more complete cycles.

Note: Authority cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015).
Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).

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

…[skipping (a)-(u)]

(v) Computers, Computer Monitors, Televisions, Signage Displays, and Consumer Audio and Video Equipment.

…[skipping *(1)-(3)*]

(4) Computer monitors. Computer monitors manufactured on or after July 1, 2019, shall comply with all of the following:

(A) The computer monitor on-mode power draw shall be less than or equal to the following equation with each of the applicable allowances applied at most once:

$E_{on} < (E_{on\_max} + E_{EP} + E_{Game} + E_{FRRG} + E_{OLED} + E_{Curve})$

Where:

E_{on} is the computer monitor on-mode power draw in watts as determined under Section 1604(v)(3) of this Article,

E_{on_max} is the maximum on-mode power draw in watts as determined by Table V-4,

E_{EP} is the enhanced performance display allowance in watts as determined in Table V-5,

E_{Game} is the gaming monitor allowance in watts as determined in Table V-5,

E_{FRRG} is the fast refresh rate gaming monitor allowance in watts as determined in Table V-5,

E_{OLED} is the OLED monitor allowance in watts as determined in Table V-5, and

E_{Curve} is the curved monitor allowance in watts as determined in Table V-5.

…[skipping *(B)-(D)*]

…[skipping *Table V-4*]

Table V-5

List of Potentially Applicable Allowances

Allowance	*Computer Monitor Type*	*Models manufactured on or after July 1, 2019, and before January 1, 2021*	*Models manufactured on or after January 1, 2021*
… [skipping E_{EP} through E_{Game}]			
E_{FRRG}	Fast refresh rate gaming monitor with MRR less than 480 Hertz	0	[0.0025*(MRR-300) + 0.25]* E_{on-max}
	Fast refresh rate gaming monitor with MRR of 480 Hertz or more	0	0.7* E_{on-max}
… [skipping E_{OLED} through E_{Curve}]			
Where “MRR” is the maximum refresh rate in Hertz.			

…[skipping *EXCEPTIONS to section 1605.3(v)(4)*]

(5) Desktop computers, thin clients, mobile gaming systems, portable all-in-ones, and notebook computers. Desktop computers, thin clients, mobile gaming systems,

portable all-in-ones, and notebook computers manufactured on or after January 1, 2019, shall:

…[skipping *(A)-(B)*]

…[skipping *EXCEPTION to section 1605.3(v)(5)(B) through EXCEPTION to section 1605.3(v)(5)(A)*]

…[skipping Table V-6 through Table V-7]

Table V-8

List of Potentially Applicable Adders

Function	*Desktop Computer, Mobile Gaming System, and Thin Client Adder (kWh/yr)*	*Notebook Computers and Portable All-In-One Adder (kWh/yr)*
… [skipping System Memory through Storage device other than main storage device]		
Integrated Display Where: "d" is the diagonal measurement of the display in inches "r" is the megapixel resolution of the display "A" is the viewable screen area in square inches EP=0 for displays that are not enhanced performance displays <u>For a multi-screen notebook, this adder is applied for each integrated display that is enabled when shipped and shall show the same test image during testing.</u>	For d≤20: (8.76*0.35*(1+EP)* [(4.2*r)+5.7])*0.8 For 20<d<23: (8.76*0.35*(1+EP)* [(4.2*r)+(0.02*A)+2.2])*0.8 For 23≤d<25: (8.76*0.35*(1+EP)* [(4.2*r)+(0.04*A)-2.4])*0.8 For 25≤d: (8.76*0.35*(1+EP)* [(4.2*r)+(0.07*A)-10.2])*0.8 r=6 for resolutions greater than 6 megapixels. Before July 1, 2021: EP=0.3 for displays with a color gamut support of 32.9% of CIELUV or greater (99% or	8.76*0.3*(1+EP)* [(0.43*r)+(0.0263*A)] r=6 for resolutions greater than 6 megapixels. EP=0.4 for displays with a color gamut support of 38.4% of CIELUV or greater (99% or more of defined Adobe RGB colors).

	more of defined sRGB colors); and EP=0.75 for displays with a color gamut support of 38.4% of CIELUV or greater (99% or more of defined Adobe RGB colors). On or after July 1, 2021: EP=0.2 for displays with a color gamut support of 32.9% of CIELUV or greater (99% or more of defined sRGB colors); and EP=0.6 for displays with a color gamut support of 38.4% of CIELUV or greater (99% or more of defined Adobe RGB colors).	
… [skipping First Discrete GPU that is not packaged on the same substrate as the GPU (on or after January 1, 2019 and before July 1, 2021) Where “B” is frame buffer bandwidth measured in GB/s through video surveillance card]		
Wired Ethernet with a transmit rate of greater than 1 Gb/s and less than 10 Gb/s that is not an Add-in card	4 per computer	0
… [skipping Additional Wired Ethernet or Fiber Card with a transmit rate of 10Gb/s or greater to the end of Table V-8]		

. . .[skipping to the end of section 1605.3]

Note: Authority cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor’s Exec. Order No. B-29-15 (April 1, 2015).

Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Section 16, Governor’s Exec. Order No. B-29-15 (April 1, 2015).

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

…[skipping Table X, "All Appliances" through Section V Medical Computer Monitors]

	Appliance	*Required Information*	*Permissible Answers*
V	Computer Monitors	… [skipping Backlight Type through Gaming Monitorw/o Incremental Hardware]	
		Fast refresh rate gaming monitor	True/False
		Maximum Refresh Rate (Hz)	
		… [skipping KMM_KVM through end of computer monitors]	
	Computers (Note: Units with more than one integrated display must certify related data for each screen)	…[skipping Computer Type through Integrated Display]	
		Multi-screen notebook	True, False
		Number of integrated screens	
		Color Gamut (if computer has integrated screen)	>32.9% of CIELUV (99% or more of defined sRGB colors), >38.4% of CIELUV (99% or more of defined Adobe RGB colors), <32.9% of CIELUV
		Diagonal Screen sizes (inches) (if computer has integrated display)	
		Viewable screen area (square inches) (if computer has integrated display)	
		Resolution (megapixels) (if computer has integrated display)	
		Enhanced Performance (if computer has integrated display)	True, False

		…[skipping Length of time use inactivity before computer entering sleep (minutes) through Length of time use inactivity before placing display into sleep (minutes)]	
		Notebook computer with Cyclical behavior	True, False
		Operation of the notebook computer without a battery pack is a supported configuration when connected to the mains power source	True, False
		One complete cycle of battery charging and discharging in computer short-idle mode (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	
		Computer short-idle mode test duration (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	
		One complete cycle of battery charging and discharging in computer long-idle mode (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	

		Computer long-idle mode test duration (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	
		One complete cycle of battery charging and discharging in computer sleep mode (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	
		Computer sleep mode test duration (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	
		One complete cycle of battery charging and discharging in computer off mode (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	
		Computer off mode test duration (seconds) (Applies only to notebook computers with cyclical behavior where operation without a battery pack is not a supported configuration when connected to the mains power source)	

		Wired Ethernet port with a transmit rate of more than 1 Gb/s and less than 10 Gb/s that is not an Add-in card	True, False
		Data transmission rate of wired Ethernet port with a transmit rate of more than 1 Gb/s and less than 10 Gb/s that is not an Add-in card (Gb/s)	
… [skipping Energy Efficient Ethernet Capability to the end of Table X]			

…[skipping to the end of section 1606]

Note: Authority cited: Sections 25213, 25218(e), 25401.9, 25402(a)-25402(c) and 25960, Public Resources Code; and Sections 16, 26 and 30, Governor's Exec. Order No. B-29-15 (April 1, 2015).

Reference: Sections 25216.5(d), 25401.9, 25402(a)-25402(c), 25402.5.4 and 25960, Public Resources Code; and Section 16, Governor's Exec. Order No. B-29-15 (April 1, 2015).