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CALIFORNIA ENERGY COMMISSION

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**INITIAL STATEMENT OF REASONS**

Title 20. Public Utilities and Energy
Division 2. State Energy Resources Conservation and Development Commission
Chapter 4. Energy Conservation
Article 4. Appliance Efficiency Regulations

Docket No. 20-AAER-03
Computers and Computer Monitors
Notice Published on October 2, 2020

INTRODUCTION

The California Energy Commission (CEC) proposes to amend regulations for computers and computer monitors in the Appliance Efficiency Regulations after considering all comments, objections, and recommendations regarding the proposed action.

PROBLEM STATEMENT

The Warren-Alquist Act establishes the CEC as California's primary energy policy and planning agency. Sections 25213, 25218(e), and 25402(c) of the Public Resources Code mandates and/or authorizes that the Energy Commission adopt rules and regulations, as necessary, to reduce the inefficient consumption of energy and water by prescribing efficiency standards and other cost-effective measures for appliances whose use requires a significant amount of energy or water statewide.

One of the ways the CEC satisfies this requirement is through the Appliance Efficiency Regulations (California Code of Regulations (CCR), Title 20, Sections 1601-1609), which contain definitions, test procedures, efficiency standards, and marking and certification requirements for state and federally regulated appliances. Further, the regulations require that appliance manufacturers certify to the CEC that their products meet all applicable state and federal appliance efficiency regulations before their products can be included in the CEC's Modernized Appliance Efficiency Database System (MAEDbS) of appliances approved to be sold or offered for sale within California.

In 2017, the CEC amended the regulations for computers and computer monitors in response to new technologies. Recently, the CEC has been presented with a list of new technologies for computers and computer monitors that were not available at the time of the previously completed computers rulemaking.

Therefore, the CEC proposes the following amendments to the Title 20 Appliance Efficiency Regulations that would modify and clarify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations.

Existing regulations regulate the idle-mode energy consumption of most types of computers, including desktops, notebooks, workstations, and small-scale servers. The base level of energy consumption for most computers including notebooks is set at a flat rate. The regulations then provide for energy “adders” that allow manufacturers to consume energy above the base level if they contain certain additional features and functionalities in their products. Workstations and small-scale servers do not have base levels and adders but are instead required to include certain energy efficient features to ensure that energy consumption remains low.

The proposed regulations would provide a new energy allowance, or “adder”, for a type of new, innovative computer gaming monitor. This new technology allows users to view image contents with a much faster refresh rate. Computer monitor on-mode energy consumption will increase as its refresh rate rises. The second tier of the energy allowances for computer monitors in the existing regulations, which will become effective on January 1, 2021, can accommodate energy consumption of monitors with refresh rates up to 300 Hz. The proposed energy adder applies to the second-tier standards and pertains only to computer monitors with refresh rates of 300 Hz or higher.

The proposed regulations would also add a new energy adder for a new type of Ethernet that provides data transfer rates of more than 1 gigabits per second and less than 10 gigabits per second. Regardless of their data transfer rates, Ethernet ports provided through an add-in card receive the generic energy adder for add-in cards. For this reason, the new energy adder is only applied for Ethernets with data transfer rates between 1 to 10 gigabits per second that are integrated onto the motherboard and therefore do not meet the definition of an add-in card.

The proposed regulations would also modify the existing regulations by supplementing a definition for computers with cyclical behavior. Most battery-operated computers only charge their batteries when connected to the AC main power source. However, notebooks computers that incorporate this new technology periodically charge and discharge their batteries while they are connected to the main power source, causing a cyclical pattern in power consumption by the computer. Furthermore, the CEC proposes to address the test procedure for this type of computer through this rulemaking.

The proposed regulation would also add a new definition for multi-screen notebooks. These new innovative notebooks offer secondary screens embedded on the surface where the notebook keyboard is typically located. For these notebooks, the keyboard is typically in the form of touch screen, although it could also be a mechanical keyboard. However, multi-screen notebooks with mechanical keyboards meet the existing definition of a notebook computer and do not need to be included in the new definition.

The proposed regulations would further modify the existing regulations by modifying the definition of notebook computers to allow inclusion of multi-screen notebook computers, meaning they would have to comply with the notebook standards. The proposed regulations would also modify the test procedure to address the testing protocol for these multi-screen computers.

PURPOSE

The purpose of this rulemaking is to update to the Appliance Efficiency Regulations to modify and clarify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations that were not known at the time of the previously completed rulemakings.

BENEFITS

The benefit of this rulemaking is to ensure that California residents will continue to have access to new and innovative technologies for computers and computer monitors. The benefits of providing clarifications to definitions, test procedures, and data reporting requirements for certifications to MAEDbS are marginal or incremental, and unique to each product type and manufacturer. The uncertainty associated with manufacturer responses in the absence of proposed regulations, as well as lack of data on benefits that result from new technologies, leads to expected benefits that are not quantifiable by the CEC. The CEC is certain that providing clarity in the testing and certification of new technologies for computers and computer monitors will yield positive benefits to California consumers.

STATEMENT OF SPECIFIC PURPOSE AND NECESSITY

SECTION 1602. DEFINITIONS

SPECIFIC PURPOSE

The specific purpose is to add new definitions related to computers and computer monitors and to amend the definition for “notebook computer.”

NECESSITY

Subsection (v) is being amended to add new definitions related to computers and computer monitors. The definitions are necessary to ensure that the terms used within regulations will have clear and unambiguous meaning to readers, including the public, and particularly to the persons and organizations affected by the regulations.

It is necessary to amend the definition for “Notebook computer” to include multi-screen notebooks under this definition. Similar to tablets, multi-screen notebooks include touch screen keyboard in place of a mechanical keyboard. It is necessary to modify the definition of the notebook computers to clarify that multi-screen notebooks are in fact a type of a notebook computer and therefore subject to notebooks efficiency standards so that manufacturers are not confused about which efficiency standard applies to their product.

SECTION 1604. TEST METHODS

SPECIFIC PURPOSE

The specific purpose is to add the test methods for computers and computer monitors. Test procedures are standardized methods that describe the testing protocol to create consistency and replicability between tests and products.

NECESSITY

Subsection (v)(4)(J) is being added to specify the testing protocols related to multi-screen notebook computers. It will allow manufacturers to show product compliance with the standards. This is necessary because in order to have energy efficiency standards, there must be corresponding standardized test methods identified that manufacturers can use to assess product performance. This section specifies the settings for each integrated display so that testing is consistent between products. This is necessary so that variations in the default modes for an integrated display is not a relevant factor in a computer's energy consumption and power limits can be applied appropriately.

Subsection (v)(4)(K)(1), (2), (3) and (4) are being added to specify the test procedure for computers that exhibit cyclical behavior. This is necessary because for this type of computers the power varies over a cycle which is often many minutes. Power measurements in the general Computer test procedure are usually taken over a period of time that is much shorter than a complete cycle for computers with cyclical behavior. It is necessary to specify the test procedure for short-idle, long-idle, sleep, and off modes to accurately capture the overall power consumption.

SECTION 1605.3 STATE STANDARDS FOR NON-FEDERALLY REGULATED APPLIANCES

SPECIFIC PURPOSE

The specific purpose is to identify the energy efficiency standards that computer monitors, and computers must meet in order to be sold or offered for sale in California.

NECESSITY

Subsection (v)(4)(A) is being amended to add an additional energy allowance or "adder" to the equation that specifies the computer monitor's on mode power consumption limit for a fast refresh gaming monitor. This change is necessary to provide an adequate energy allowance or "adder" for computer gaming monitors that provides fast refresh rate and includes Incremental hardware-based assistance. Incremental hardware includes a dedicated processor that receives frames from the discrete graphics card in the attached computer and dedicated memory that stores frames.

Table V-5 is being amended to add the amount of the additional energy allowance or “adder” that is allocated for a fast refresh gaming monitor. This is necessary because computer monitor’s on mode energy consumption is higher when its refresh rate is higher. Refresh rates of computer monitors have significantly increased with recent innovations. This amendment is necessary to provide an adequate energy allowance or “adder” for computer gaming monitors with fast refresh rates that is proportional to its refresh rate.

Table V-8 is being amended to clarify that the additional energy allowance or “adder” that is allocated for an integrated display is applied for each integrated display that is enabled when shipped and show the same test image during testing. This is necessary to ensure that an adequate energy allowance or “adder” is provided for newly innovated computers that have multiple integrated displays.

Table V-8 is being amended to add an additional energy allowance or “adder” for 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. Ethernet ports that meet the definition for Add-in cards receive an additional energy allowance or “adder”. This amendment is necessary to ensure that an adequate energy adder is provided for Ethernet ports with a transmit rate of greater than 1 Gb/s and less than 10 Gb/s that have an electrical circuit integrated onto the motherboard. Otherwise such Ethernet ports don’t receive an energy adder because they don’t meet the definition of an Add-in card.

SECTION 1606. FILING BY MANUFACTURERS; LISTING OF APPLIANCES IN THE MAEDbS

SPECIFIC PURPOSE

The specific purpose is to make edits to Table X to reflect updated requirements for computers and computer monitors.

NECESSITY

State law (Public Resources Code Section 25402(c)(1)) requires manufacturers to certify to the CEC that their appliances comply with the applicable efficiency standards before they are sold or offered for sale in the state. The Appliance Efficiency Regulations require manufacturers to report specified information for this purpose to the CEC’s Modernized Appliance Efficiency Database System (MAEDbS). MAEDbS is used by manufacturers and maintained by the CEC to list the appliances authorized to be sold or offered for sale in California. This helps the CEC and consumers verify compliance with the applicable federal and state efficiency standards.

Table X is being amended to include reporting data related to the definitions, test procedures, and standards for computers and monitors. The changes are necessary because Table X provides the reporting requirements for manufacturers for each regulated appliance. The reporting requirements specify product details and performance data that are required to be reported when submitting models of

appliances to MAEDbS for certification. It is necessary that manufacturers know the reporting requirements to certify each model to MAEDbS to comply with the regulations and be able to sell their products in California. The reporting requirements ensure that all necessary information to validate the submitted data is provided to the CEC and is necessary to determine if all test results meet the applicable standards. Manufacturers obtain all of the data points and other information required in Table X by performing the specific test procedure required for the appliance type, as specified in Section 1604.

TECHNICAL, THEORETICAL, OR EMPIRICAL STUDIES, REPORTS, OR SIMILAR DOCUMENTS.

The CEC relied on input from various stakeholders, subject matter experts, and interested parties that provided information, feedback, and subject matter expertise from operational, technical and manufacturing perspectives.

The groups and organizations that participated include:
Information Technology Industry Council (ITI), Codes and Standards Enhancement (CASE) team on behalf of California's investor owned utilities (IOU), Dell Technologies, NVIDIA, and Intel Corporation.

The CEC relied upon the following documents:
No studies or reports were relied upon.

CONSIDERATION OF REASONABLE ALTERNATIVES, INCLUDING THOSE THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS

No reasonable alternatives to the proposed regulations have been proposed that would lessen any adverse impact on small businesses or that would be less burdensome and equally effective in achieving the purposes of the regulation in a manner that achieves the purposes of the statute being implemented.

The CEC proposes amendments to the Title 20 Appliance Efficiency Regulations that would modify and clarify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations.

Specifically, the CEC proposes extending the long-idle test duration to cover one or more complete cycles while the sleep mode is disabled to prevent computer from transitioning to sleep mode. Then the computer is restarted with the sleep mode enabled, and sleep mode power measurement is started after 30 minutes of user inactivity which is consistent with the CEC's general sleep mode power measurement procedure. However, the sleep mode power measurement duration is extended to cover one of more cycles.

The CEC analyzed several alternatives for the computers with cyclical behavior's test procedure. Although part of the test procedures to take power measurements for the short-idle and off mode remained consistent for all alternatives, the test procedure sections pertaining to the long-idle and sleep power measurements are different with each alternative

Under proposed alternative one, the CEC considered extending the long-idle test duration up to 30 minutes after which the sleep power measurements start. The sleep power measurement, however, is taken over a prolonged period to cover at least one full cycle. This alternative was rejected because the long-idle power measurement may not cover a full cycle and might produce unreliable measurement results.

Under proposed alternative two, the CEC considered extending the long-idle test duration up to 30 minutes after which the sleep power measurements start. The sleep power measurement, however, is taken over a prolonged period to cover at least one full cycle. This procedure would be repeated ten times and the long-idle power would be calculated as the average of all ten experiments' long-idle power measurement. Although the long-idle power measurements would be more accurate than the previous approach, this alternative was rejected because the long-idle power measurements would not be still completely reliable.

Under proposed alternative three, the CEC considered extending the long-idle test duration to cover one or more complete cycles and as a result sleep power measurement would be delayed as well. Sleep power measurement would be also extended to cover one or more complete cycles. This alternative was rejected because it would alternate the start of sleep power measurements and therefore would create a significant inconsistency with the CEC's general sleep mode power test procedure.

SPECIFIC TECHNOLOGIES OR EQUIPMENT

None

ECONOMIC IMPACT ANALYSIS/ASSESSMENT

The Creation or Elimination of Jobs within the State of California

The CEC is proposing to amend Title 20 Appliance Efficiency Regulations that would modify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations.

The proposed regulations do not create the need for a new, non-existent good or service. Instead, they allow for the improvement of products that will replace some of the existing goods in the market. These are the new generation of the same products, and the total amount of computers sold is not expected to change as a result of this rulemaking. Businesses engaged in the manufacturing or sale of computers and computer monitors will benefit by being able to market and sell more product diversity and include products that utilize new technologies. For consumers, including businesses, small businesses and state and local agencies that purchase and use computers and computer monitors, this broader product offering in the California market typically leads to greater competition and stable or slightly decreasing prices. The proposed changes are small and incremental but will ensure that California residents and businesses will have access to new and innovative technologies. The proposed regulations are not expected to change the sales volume of computers and computer monitors. Therefore,

given no change in expected sales volumes for computers and computer monitors, the CEC has determined the proposed regulations are unlikely to create or eliminate jobs in California.

The Creation of New Businesses or the Elimination of Existing Businesses within the State of California

The CEC is proposing to amend Title 20 Appliance Efficiency Regulations that would modify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations.

The proposed regulations do not create the need for a new, non-existent good or service. Instead, they allow for the improvement of products that will replace some of the existing goods in the market. These are the new generation of the same products, and the total amount of computers sold is not expected to change as a result of this rulemaking. Businesses engaged in the manufacturing or sale of computers and computer monitors will benefit by being able to market and sell more product diversity and include products that utilize new technologies. For consumers, including businesses, small businesses and state and local agencies that purchase and use computers and computer monitors, this broader product offering in the California market typically leads to greater competition and stable or slightly decreasing prices. The proposed changes will ensure that California residents and businesses will continue to have access to new and innovative technologies. Therefore, the CEC has determined the proposed regulations are unlikely to create or eliminate any new or existing businesses in California.

The Expansion of Businesses Currently Doing Business within the State of California

The CEC is proposing to amend Title 20 Appliance Efficiency Regulations that would modify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations.

The proposed regulations do not create the need for a new, non-existent good or service. Instead, they allow for the improvement of products that will replace some of the existing goods in the market. These are the new generation of the same products and the total amount of computers sold not expected to change as a result of this rulemaking. Businesses engaged in the manufacturing or sale of computers and computer monitors will benefit by being able to market and sell more product diversity and include products that utilize new technologies. For consumers, including businesses, small businesses and state and local agencies that purchase and use computers and computer monitors, this broader product offerings in the California market typically leads to greater competition and stable or slightly decreasing prices. The proposed changes will ensure that California residents and businesses will continue to have access to new and innovative technologies. Therefore, the CEC has determined it is unlikely that businesses doing business in California will be expanded.

Benefits of the Regulations to the Health and Welfare of California Residents, Worker Safety, and the State's Environment

The benefit of this proposed action is to update the Appliance Efficiency Regulations to incorporate new technology related to computers and computer monitors, ensuring California residents will continue to have access to new and innovative technologies.

The proposed regulation will not affect the health and welfare of California residents, worker safety, or the state's environment.

Results of the Economic Impact Assessment/Analysis

The CEC concludes that it is: (1) unlikely the proposal will create jobs within California, (2) unlikely that the proposal will eliminate jobs within California, (3) unlikely the proposal will create new businesses in California, (4) unlikely the proposal will eliminate existing businesses within California, and (5) unlikely the proposal will result in the expansion of businesses currently doing business within the state.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

These proposed regulations do not duplicate or conflict with any federal regulations contained in the Code of Federal Regulations.

EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT ADVERSE ECONOMIC IMPACT AFFECTING BUSINESS

The CEC has made an initial determination that the proposed regulations are unlikely to have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states.

The CEC proposes amendments to the Title 20 Appliance Efficiency Regulations that would modify existing standards and test procedures for computers and computer monitors to incorporate new technologies and innovations that were not known at the time of the previously completed rulemaking.

The proposed regulations do not create the need for a new, non-existent good or service. Instead, they allow for the improvement of products that will replace some of the existing goods in the market. These are the new generations of the same products and the total amount of computers sold is not expected to change as a result of this rulemaking. Businesses engaged in the manufacturing or sale of computers and computer monitors will benefit by being able to market and sell more product diversity and include products that utilize new technologies. For consumers, including businesses, small businesses and state and local agencies that purchase and use computers and computer monitors, this broader product offering in the California market typically leads to greater competition and stable or slightly decreasing prices. The proposed changes will ensure that California residents and businesses will continue to have access to new and innovative technologies.

Under the Appliance Efficiency Regulations, retailers are responsible for ensuring that the regulated products they sell are certified to the CEC and appear in the CEC's MAEDbS before they are sold or offered for sale in California. Because data submittal requirements have been revised to certify computer and computer monitor products, the CEC believes that some retailers may experience additional costs associated with checking MAEDbS to ensure that the products they sell appear in the MAEDbS and are therefore compliant and lawful to sell in the state.

FOR FURTHER INFORMATION

Inquiries concerning all aspects of the rulemaking process, including the substance of the proposed regulations or any other information upon which the rulemaking is based, should be directed to Corrine Fishman at Corrine.Fishman@energy.ca.gov. If Corrine Fishman is unavailable, please contact Soheila Pasha at Soheila.pasha@energy.ca.gov.