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INITIAL STATEMENT OF REASONS

Computers and Light-Emitting Diode Lamps Appliance Efficiency Rulemaking

California Energy Commission
Docket No. 17-AAER-15
September 22, 2017

I. STATEMENT OF SPECIFIC PURPOSE AND RATIONALE- Government Code §11346.2(b)(1)

INTRODUCTION

The California Energy Commission (Commission) is required to reduce the inefficient consumption of energy by prescribing efficiency standards and other cost-effective measures for appliances that require a significant amount of energy to operate on a statewide basis. (Public Resources Code section 25402(c).) One of the ways the Commission satisfies this requirement is through the Appliance Efficiency Regulations (California Code of Regulations, title 20, sections 1601-1609), which contain definitions, test procedures, efficiency standards, marking, and certification requirements for state- and federally-regulated appliances. Further, the regulations require that appliance manufacturers certify to the Commission that their products meet all applicable state and federal appliance efficiency regulations before their products can be included in the Commission's database of appliances approved to be sold or offered for sale within California.

The regulatory text approved by the Office of Administrative Law on August 22, 2017, is the existing regulation as referenced in this document. The proposed regulations are shown in underline and strikeout with respect to the regulatory text approved by the Office of Administrative Law on August 22, 2017.

In May 2017, the Commission adopted appliance efficiency regulations for computers and computer monitors. For computers, the efficiency regulations focus on reducing the energy consumption of computers when they are not being used (called "idle mode"). Computer monitors have efficiency targets for each mode, including on-mode. The regulations also clarified that signage displays are regulated under the television standards, and exempted certain backup battery chargers from the battery charger standards.

For desktop computers, the Commission set a base level of energy consumption that is based on the computer's "expandability score," a scoring system that identifies the requisite power needs of the desktop based on the included features and functionalities. For notebooks, the base level was a flat rate, as there is not as much variability in the basic functionalities of notebooks. The regulations then provide for

“adders” that allow manufacturers to consume energy above the base level if they include additional features and functionalities in their products. Each adder is the specific amount of energy that is considered necessary for the feature to work properly. Workstations and small-scale servers do not have base levels or adders, but are instead required to include certain energy efficient features to ensure that energy consumption remains low. While desktops, notebooks, workstations, and small-scale servers are the four basic categories of computers for purposes of the standards, there are other computer types, such as thin-clients, mobile workstations, mobile gaming systems, and portable all-in-ones, that the regulations place into one of the four main categories for purposes of assigning an appropriate standard.

The proposed regulations would provide a new “adder” to address a new and innovative technology that was not available for consideration at the time of the original computers rulemaking. The proposed regulations also modify the definitions to ensure that the additional computer types fit properly in their intended definitions.

In January 2016, the Commission adopted appliance efficiency regulations for state-regulated LED lamps and small-diameter directional lamps (SDDLs). For state-regulated LED lamps, the efficiency regulations focus on reducing the energy consumption of the lamps while also requiring minimum levels of performance for other aspects of the lamps, such as color rendering. For SDDLs, the efficiency regulations focus on reducing the energy consumption of the lamps. In addition to the efficiency and performance requirements, the regulations require minimum lamp lifetime of 10,000 hours for state-regulated LEDs and 25,000 hours for SDDLs. The regulations specify a test procedure for state-regulated LED lamps and the LED versions of SDDLs that is aligned with the U.S. Department of Energy (DOE) test procedure. Under the applicable federal test procedure, this correlates to a five month test for state-regulated LED lamps and a seven month test for SDDLs to determine lifetime, compared to a couple of weeks to test other aspects of the lamp. DOE allows manufacturers to report estimated lifetime pending completion of lifetime testing. Manufacturers are required to document their process for determining the estimated lifetime, to maintain relevant records, and to report final lifetime to DOE upon completion of the test procedure.

The proposed regulations would allow manufacturers to report estimated lifetime to the Commission pending completion of lifetime testing. This proposal would align the California Code of Regulations with the Code of Federal Regulations with respect to reporting of lifetime. The proposal would require reporting of final lifetime to the Commission upon completion of the test procedure.

COMPUTERS

PROBLEM STATEMENT

The problem the Commission is trying to solve with these regulations is providing sufficient regulatory flexibility for new and innovative technologies used in computers while also maintaining the expected energy savings from the existing appliance efficiency standards for computers that are in some ways specific to the technologies that existed at the time of the rulemaking.

Since adoption of the original regulations manufacturers have developed a new technology allowing for discrete graphics processing units (GPUs) to be packaged on the same substrate as the computer processing unit (CPUs). In the current regulations, the definition of the discrete GPU does not pertain to this new technology. Therefore, the regulations need to be changed to accommodate this innovation through the definition of a discrete GPU and to specify an appropriate adder for it.

Additionally, the definition of mobile workstations needs to change because one of its criteria is to have either a high-end integrated GPU or a discrete GPU. However, not all mobile workstations are sold with a discrete GPU, and an integrated GPU that meets the specified criteria will not be available in the market by the effective date of the regulations.

The definition of mobile gaming systems also needs to change. Even though mobile gaming systems and notebook computers have a similar form factor, they are required to comply with different standards. The criteria specified in the definition of a mobile gaming system are carefully drafted to distinguish it from a notebook. However, a recent study found that the criterion that specifies a minimum limit for the battery size of a gaming notebook is set too high. Therefore the regulations need to change to adjust the minimum battery size for a mobile gaming system in order to accurately capture computers in their intended scope.

Lastly, it is essential to collect all the data that is needed to verify a product's compliance with the regulations. Changes are required to Table X in section 1606 to add data fields that need to be collected to monitor for the proposed changes for discrete GPUs as well as to add a few reporting requirements specific to system memory that were omitted in the original regulations.

BENEFITS

The proposed regulations will benefit California residents by ensuring that they have access to new and innovative discrete GPUs in computers while maintaining the energy savings expected from their computer systems as a result of the 2016 appliance efficiency standards. It also ensures that consumers that are purchasing a mobile workstation in California are not obligated to order their systems with an expensive discrete GPU if they don't need it. Moreover, the proposed change for the mobile

gaming systems allows such computers with smaller battery sizes to be sold in California and therefore benefits consumers by expanding their choices. The proposed regulations will also benefit manufacturers by providing certainty about the treatment of these new and innovative technologies and by providing clarity with respect to the intended coverage of their products. This will help reduce compliance costs and issues.

SPECIFIC PURPOSE, RATIONALE, AND NECESSITY

Section 1602(v), “Discrete GPU”

Purpose: To modify the term “discrete GPU” so that it includes discrete GPUs that are packaged on the same die or substrate as the CPU.

Necessity: This modification is necessary to broaden the definition of “discrete GPU” in order to include new technology that was not available for consideration in the prior rulemaking and to allow manufacturers to apply the appropriate adders to their computers when determining the efficiency levels applicable under the computer efficiency standards in section 1605.3(v). Moreover, it allows all the specifications and criteria that are relevant to discrete GPUs, such as discrete GPU criteria for high expandability computers, to be applied to the new technology.

Section 1602(v), “Mobile gaming system”

Purpose: To modify the term “mobile gaming system” to change one of the criteria in the definition from 90 to 75 watt-hours or greater of total battery capacity, so that all intended systems are included in this category of computers.

Necessity: Mobile gaming systems have a similar form factor to notebooks; however, because they typically offer a wider array of features that require more power, they are allowed a higher energy consumption level than notebooks. For this reason, the original computer regulations include specific criteria to distinguish a mobile gaming system from a conventional notebook computer. A minimum battery size limit, currently 90 watt hours, is one of the criteria for a mobile gaming system in the regulations. However, this is too high and eliminates a majority of products that would ordinarily be considered mobile gaming systems from this category, meaning they would have to comply with the notebook standards, which they cannot meet. If not corrected, a significant portion of mobile gaming systems would not be eligible for sale in California.

Section 1602(v), “Mobile workstations”

Purpose: To allow computers to be considered mobile workstations if they support, whether or not they have, either at least one discrete GPU with frame buffer bandwidth of 96 gigabytes per second or greater, or a total of 4 gigabytes or more of system memory with a bandwidth of 134 gigabytes per second or greater and an integrated GPU.

Necessity: This modification to the definition of “mobile workstation” is necessary because not all mobile workstations are shipped with a discrete GPU or with an integrated GPU with high frame buffer bandwidth. Therefore, changing the word “has” to “support” for the graphics requirement clarifies the types of products that are intended to be covered under the definition and to distinguish them from products that are not intended to be covered. Different efficiency levels apply to different products based on their definitions, so clarifying the intended scope of each definition is critical to ensuring that the real-life products achieve the expected energy savings from the standards. Without this modification, a number of computer systems that should be considered “mobile workstations” will instead be considered “notebooks” and will be subject to lower energy consumption standards, which they cannot meet.

Section 1605.3(v)(5)

Purpose: To add a smaller additional energy allowance or “adder” in Table V-8 for a first discrete GPU that is packaged on the same substrate as the CPU.

Necessity: This modification is necessary to provide an adequate energy allowance or “adder” for different types of discrete GPUs. Discrete GPUs that are packaged on the same substrate as the CPU require a smaller energy “addition” than conventional discrete GPUs, but a higher “addition” than integrated GPUs. If the Commission changed the definition of “discrete GPU” alone, a discrete GPU that is packaged on the same substrate as a CPU would receive an unnecessarily large adder, resulting in lost energy savings compared to the original rulemaking.

Section 1606, Table X, Section V

Purpose: To modify the data submittal requirements for computers to require manufacturers to provide information relevant to the type of discrete GPU being certified, and to clarify and identify system memory bandwidth(s) and their capacity(ies) for purposes of monitoring compliance with the applicable exemptions and allowances.

Necessity: This information is necessary to confirm that products meet the identified exemptions in the standards and are receiving appropriate allowances under the standards.

A computer might have more than one type of system memory. System memory size and bandwidth data needs to be collected for each type of system memory in order to calculate the overall system memory bandwidth and size, and verify that the computer is receiving the appropriate allowances and exemptions under the standards. System memory bandwidth is used in the standards for high expandability computers and mobile workstations, and in high bandwidth system memory adder for all computers.

LED LAMPS

PROBLEM STATEMENT

The problem the Commission is trying to solve with these regulations is to address concerns regarding the duration of required LED lamp lifetime testing expressed by LED lamp manufacturers after completion of the Commission's rulemaking on state-regulated LED lamps and SDDLs. Under the applicable federal test procedure, it is a five month test for state-regulated LED lamps and a seven month test for SDDLs to determine lifetime, compared to a couple of weeks to test other aspects of the lamp. Manufacturers expressed concern to the Commission that the duration of required LED lamp lifetime testing will unnecessarily delay the introduction of new LED products into the marketplace. The DOE's requirements allow for reporting of estimated lifetime pending completion of lifetime testing. Manufacturers must make lifetime estimates in a manner consistent with the lifetime test procedure and must document their methods and data. Manufacturers must report final lifetime values to the DOE once the lifetime testing is completed. The Commission required test procedures are already aligned with the DOE required test procedures. The Commission proposes to align its reporting requirements with the DOE's, to allow manufacturers to report estimated lifetime pending completion of lifetime testing and to require manufacturers to report final lifetime values once testing is complete.

BENEFITS

The proposed regulations will increase the flexibility of businesses to manufacture and sell products that comply with the regulations. The proposed regulations will benefit manufacturers by enabling them to introduce new LED lamps into the California market five to seven months earlier than would be permitted under the existing regulations. The proposed regulations will benefit California businesses and residents by allowing them to purchase a manufacturer's newest LED lamps while maintaining the energy savings expected from the original efficiency regulations. The proposed regulations would require reporting of final lifetime to the Commission upon completion of the test procedure. The proposed regulations do not change the underlying costs or energy savings expected from the existing regulations.

SPECIFIC PURPOSE, RATIONALE, AND NECESSITY

Section 1606(a), Exception 5. to Section 1606(a)(3)(C)

Purpose: To modify the reporting requirements for lifetime of state-regulated LED lamps and the LED versions of state-regulated SDDLs to allow manufacturers to report estimated lifetime pending completion of lifetime testing.

Necessity: Because of the extraordinarily long time required to complete LED lamp lifetime testing compared to testing of other aspects of the lamp, not allowing estimated lifetime would essentially delay the introduction of new LED lamps into the California

market for at least five months. The proposed modifications allow LED lamps to be introduced into the California market earlier than would be permitted under the existing regulations without changing the underlying costs or energy savings expected from the existing regulations.

Section 1606, Documents Incorporated by Reference

Purpose: In order to modify the reporting requirements in 1606(a) to allow for reporting prior to completion of testing, it was necessary to incorporate the federal test method by reference. This change identifies that document as being incorporated by reference.

Necessity: Identifying the test method eliminates any ambiguity as to what the exception applies to.

II. DOCUMENTS AND REPORTS RELIED UPON- Government Code §11346.2(b)(3)

The Commission has relied upon the following technical, theoretical, or empirical studies, reports, or similar documents in drafting the proposed regulations:

COMPUTERS

Information Technology Industry Council (ITI) and Technology Network (Technet), ITI & Technet Concerns CEC Computers/Displays (August 10, 2017).

LED LAMPS

Code of Federal Regulations, title 10, section 429.56(b)(2).

Email to Energy Commission from Jim Gaines. Philips Lighting. March 8, 2017.

Test Procedures for Integrated Light Emitting Diode Lamps; Final Rule, 81 Federal Register 43404, 43419-43420 (July 1, 2016).

III. CONSIDERATION OF REASONABLE ALTERNATIVES, INCLUDING THOSE THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS - Government Code §11346.2(b)(4)

No reasonable alternatives to the proposed regulations have been proposed that would lessen any adverse impact on small business 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.

COMPUTERS

One of the objectives of the proposed regulations for computers is to allow for the use of new, innovative technologies, the existence of which were not known at the time of the original computers rulemaking. A discrete GPU packaged on the same substrate as the CPU is such a technology. This technology would not be eligible to receive the adder that is provided in the regulations for discrete GPUs absent an action by the Commission to modify the definition of the discrete GPU and provide an appropriate adder.

The Commission considered not providing an adder for this technology. This would result in computers with the new technology to receive a significantly lower energy allowance, which would mean that manufacturers would need to reduce energy consumption in other parts of the computer or forgo using the new technology altogether. This alternative was rejected because it would have negatively affected the public's access to computers using this technology feature, and it would have adversely harmed manufacturers and retailers, including small businesses, looking to sell this technology in the California market.

The Commission also considered broadening an existing adder to include the new technology in this scope. This alternative was rejected because the new technology does not need the same amount of energy allowances as the existing adders. If an adder were applied with a higher energy allowance than needed, manufacturers could use the higher total energy consumption levels to increase energy consumption from another feature in the computer, resulting in higher energy consumption from these products and lower energy savings. This ultimately harms the consumer who has to pay both for the additional feature and for the higher cost of electricity associated with the computer when it is in an idle mode. Consumers may be both individuals and businesses, including small businesses.

The other objective of this rulemaking for computers is to ensure that mobile workstations and mobile gaming systems are not subject to the more stringent notebook standards. A recent market evaluation of notebooks indicated that the definitions for the mobile workstations and mobile gaming system require some fine tuning to ensure that these computers stay within their intended category.

The Commission considered not modifying the criteria for mobile workstations and mobile gaming systems. This alternative was rejected because it causes some mobile workstations and mobile gaming systems to be considered as a notebook. Those computers will not be able to comply with the notebook standards and therefore will be eliminated from the California market. This will harm consumers by narrowing their options in choosing a suitable computer system. It will also harm manufacturers and retailers, including small businesses that otherwise could offer these computer models for sale in California.

LED LAMPS

The objective of this rulemaking for LED lamps is to align Commission reporting requirements with the DOE's reporting requirements. This alignment will allow

manufacturers of state-regulated LED lamps and the LED versions of state-regulated SDDLs to report estimated lifetime pending completion of lifetime testing. Under the applicable federal test procedure, it is a five month test for state-regulated LED lamps and a seven month test for SDDLs to determine lifetime, compared to a couple of weeks to test other aspects of the lamp. The proposed regulations will enable manufacturers, including small businesses, to introduce new LED lamps into the California market five to seven months earlier than would be permitted under the existing regulations.

The Commission considered not modifying the reporting requirements to allow manufacturers to report estimated lifetime pending completion of lifetime testing. This alternative was rejected because requiring completion of lifetime testing would reduce manufacturer flexibility to comply with the regulations, delay introduction of products into the California market, and result in manufacturers supplying a narrower product offering to the California market. If the introduction of new LED lamps into the California market was delayed, it would harm California business and residences by narrowing available product offerings of compliant LED lamps. Additionally, the primary objective of the existing regulations –energy savings – is not dependent on lamp lifetime.

IV. SPECIFIC TECHNOLOGIES OR EQUIPMENT– Government Code §11346.2(b)(1)

The proposed regulations do not mandate a specific technology, and instead maintain the performance standards from the existing regulations.

V. DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS– Government Code §11346.2(b)(6)

COMPUTERS

The proposed regulations do not duplicate or conflict with any federal regulation contained in the Code of Federal Regulations. The Commission has reviewed the federal regulations and confirmed that there are no federal requirements regarding the energy efficiency of computers.

LED LAMPS

The proposed regulations do not duplicate or conflict with any federal regulation contained in the Code of Federal Regulations. The Commission has reviewed the federal regulations and confirmed that there are no federal requirements regarding the energy efficiency of LED lamps. The existing regulations align the California required test procedure for LED lamps with the federal test procedure for LED lamps. The proposed regulations will align the California required reporting for LED lamp lifetime with the federal required reporting for LED lamp lifetime.

VI. ECONOMIC IMPACT ASSESSMENT (Government Code §11346.3(b))

Creation or elimination of jobs within the state. No new jobs will be created and no existing jobs will be eliminated by the proposed regulations. The proposed regulations for computers provide for an adder that will allow the use of a new technology in computers, and make minor modifications to the definitions to improve clarity. The proposed regulations for state-regulated LED lamps and the LED versions of state-regulated SDDLs allow manufacturers to report estimated lifetime pending completion of lifetime testing. These changes would not change the total shipment or sales of computers or LED lamps in California or the energy savings expected from the efficiency standards for computers or LED lamps and therefore would not result in the creation or elimination of any jobs.

Creation of new businesses or elimination of existing businesses within the state. No new businesses will be created and no existing businesses will be eliminated by the proposed regulations. The proposed regulations for computers provide for an adder that will allow the use of a new technology in computers, and make minor modifications to the definitions to improve clarity. The proposed regulations for state-regulated LED lamps and the LED versions of state-regulated SDDLs allow manufacturers to report estimated lifetime pending completion of lifetime testing. These changes would not change the total shipment or sales of computers or LED lamps in California or the energy savings expected from the efficiency standards for computers or LED lamps and therefore would not result in the creation or elimination of businesses.

Expansion of businesses currently doing business within the state. The proposed regulations will not result in the expansion of any businesses currently doing business in the state. The proposed regulations for computers provide for an adder that will allow the use of a new technology in computers, and make minor modifications to the definitions to improve clarity. The proposed regulations for state-regulated LED lamps and the LED versions of state-regulated SDDLs allow manufacturers to report estimated lifetime pending completion of lifetime testing. These changes would not change the total shipment or sales of computers or LED lamps in California or the energy savings expected from the efficiency standards for computers or LED lamps and therefore would not result in the expansion of any existing businesses.

Benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment. The proposed regulations for computers will benefit California residents by allowing them to purchase computers with new and innovative features while maintaining the energy savings expected from the original computer efficiency standards. The proposed regulations for state-regulated LED lamps and the LED versions of state-regulated SDDLs will benefit California businesses and residents by allowing them to purchase a manufacturer's newest LED lamps while maintaining the energy savings expected from the original efficiency regulations. The Energy Commission does not anticipate any additional benefits to California residents or the state's environment because the expected energy savings from the proposed regulations remain the same as the original rulemaking setting computer and LED lamp efficiency standards. The Energy Commission does not anticipate any benefits to worker safety as

a result of the proposed regulations because this regulatory action will not impact working conditions or worker safety.

VIII. EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT ADVERSE ECONOMIC IMPACT AFFECTING BUSINESS – Government Code section 11346.2(b)(5)(A)

The effects of the proposed regulations would be to allow new graphics technology for computers to be introduced, to accurately categorize products for mobile workstations and mobile gaming systems, and to allow earlier introduction of LED lamps into the California market. For manufacturers, the proposed regulations allow for broader product offerings in the California market and increased flexibility in meeting the regulations. For consumers, including businesses, broader product offerings in the California market typically leads to greater competition and stable or decreasing prices. Nothing in the proposed regulations imposes a new mandatory requirement or cost. For these reasons, the Energy Commission has determined that the proposed regulations will not have a significant adverse economic impact on business.

COMPUTERS

The Commission has determined that the proposed regulations for computers will not have a significant adverse economic impact on business. The proposed modifications to the computer efficiency regulations will allow for the inclusion of a new, innovative technology by providing an appropriate energy allowance for the technology. This does not result in any costs or savings, as the technology was not considered at the time of the rulemaking, so the additional allowance would not change the overall energy savings expected from the rulemaking. As a result, businesses engaged in the manufacture or sale of computers would benefit by having more product diversity and technology to market and sell; businesses that purchase or use computers would continue to receive the energy-saving benefits from the underlying appliance efficiency regulations.

LED LAMPS

The Commission has determined that the proposed regulations for LED lamps will not have a significant adverse economic impact on business. The proposed modifications to the regulations will allow manufacturers to report estimated lifetime to the Commission pending completion of lifetime testing. The proposed regulations do not change the underlying costs or energy savings expected from the existing regulations because they only extend the time by when final lamp lifetime must be reported to the Commission. As a result, businesses engaged in the manufacture or sale of LED lamps will have increased flexibility to comply with the regulations, allowing for earlier introduction of products into the California market and a broader product offering. California businesses that utilize LED lamps will be able to purchase a manufacturer's newest LED lamps while maintaining the energy savings expected from the original efficiency regulations.