



January 16, 2015

Ms. Verena Radulovic  
ENERGY STAR Program – Product Labeling  
U.S. Environmental Protection Agency  
Ariel Rios Building 6202J  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

Subject: ENERGY STAR Version 7 Draft 1 Displays Specification

Dear Ms. Radulovic:

This letter comprises the comments of the Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), Southern California Gas Company (SCG), and Southern California Edison (SCE) in response to the U.S. Environmental Protection Agency's (EPA) ENERGY STAR Version 7 Draft 1 Displays Specification.

The signatories of this letter, collectively referred to herein as the California Investor Owned Utilities (CA IOUs), represent some of the largest utility companies in the Western United States, serving over 35 million customers. As energy companies, we understand the potential of appliance efficiency programs to cut costs and reduce consumption while maintaining or increasing consumer utility of the products. We have a responsibility to our customers to advocate for voluntary program requirements that accurately reflect the climate and conditions of our respective service areas, so as to maximize their positive effects.

The EPA and stakeholders have made significant strides towards the development of a meaningful specification and test procedure for this rapidly evolving product class. We generally support EPA's and Department of Energy's (DOE) efforts to establish new ENERGY STAR performance requirements and ask EPA and DOE to consider carefully the following recommendations.

#### 1) On Mode Proposal Comments

- a) **EPA should ensure that the On Mode power requirements in Version 7 represent the most efficient 25% of the market when the specification takes effect. Therefore EPA should target the top 10-15% of the current dataset to account for the rapid development cycles of this product category. EPA should propose more stringent On Mode requirements for computer monitors with a diagonal screen size between 21- and 24-inches.**

On Mode requirements should be established to ensure that when the specification takes effect, the top performing 25% of models will be able to meet the requirements, consistent with program principles.

Given the relatively short product development cycles and the historically fast pace of technology development for these consumer electronic products, EPA should anticipate rapid adoption of On Mode levels and set requirements aggressive enough to ensure relevancy of the Version 7 specification in the market. The current Version 6 specification first took effect June 2013. In the following six months, based on an analysis conducted by Lawrence Berkeley National Laboratory (LBNL), the market penetration of Version 6 monitors in 2013 was estimated to be 77%.<sup>1</sup> EPA’s own analysis shows that by the end of 2014, only 18 months after Version 6 took effect, 80 to 90% of all monitors available met the Version 6 specification.<sup>2</sup> To ensure the relevancy of the Version 7 specification once it takes effect and in the years following, EPA should aim to capture approximately 10-15% of the current ENERGY STAR dataset, not 20% as currently proposed; targeting the top 10-15% is a similar approach to the one EPA proposed in the Version 7 Draft 1 Television specification.<sup>3</sup>

In order to target 10-15% of the current dataset instead of 20%, EPA should focus on establishing more stringent On Mode levels for the size categories of computer monitors that are a majority of the market: 21- and 24-inches. These size categories currently comprise over 60% of the total US shipments of computer monitors in the U.S. and are projected to remain over 60% in the coming years, based on market shipment information from IHS iSuppli displayed in Figure 1.

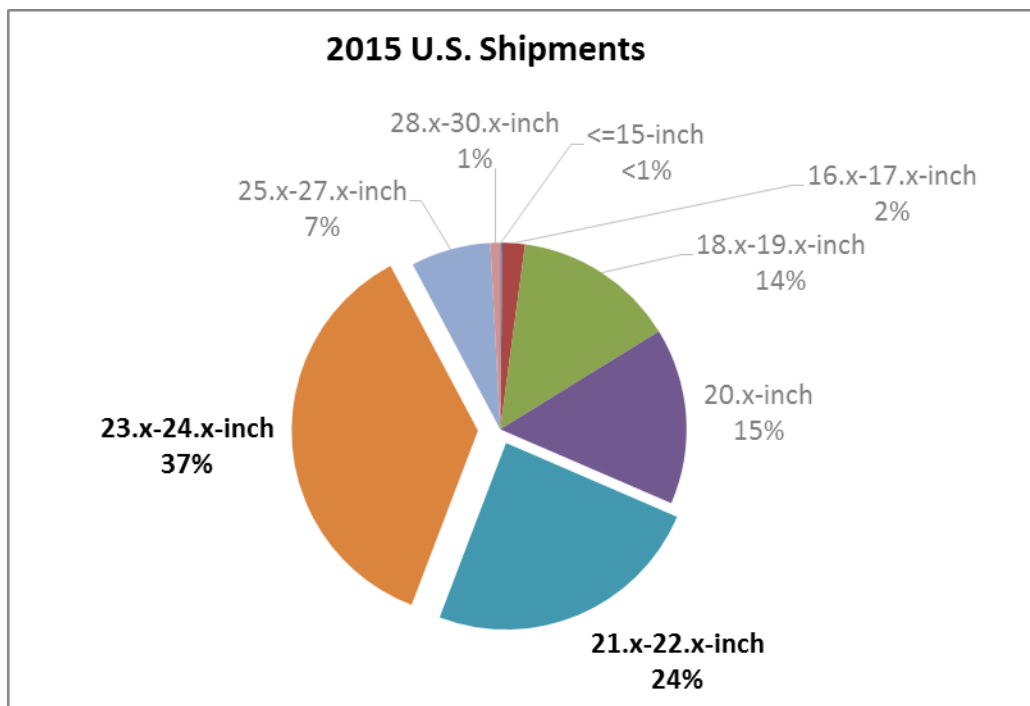


Figure 1 Computer Monitor 2015 U.S. Shipments

Source: IHS iSuppli

<sup>1</sup> Table 8. *Efficiency improvement opportunities for personal computer monitors: implications for market transformation programs.* Won Young Park et. al., 2013.

<sup>2</sup> ENERGY STAR Program Requirements for Displays – Draft Eligibility Criteria

<sup>3</sup> Slide 43. ENERGY STAR Version 7.0 Draft 1 Televisions Stakeholder Webinar. June 17, 2014.

Because these size categories will account for a majority of the computer monitor shipments in 2016, EPA should consider adjusting the Version 7 On Mode requirements for models to reduce the percentage of current models that can meet the requirements in the dataset (shown in Figure 2). EPA should keep in mind, once the Version 7 On Mode requirements are finalized, manufacturers will have nine months to redesign their equipment to meet the levels. Setting On Mode levels for 21- to 24-inch models slightly more stringent would improve the likelihood that when the specification goes into effect, the ENERGY STAR label delivers upon its promise to consumers of actually differentiating the most energy efficient products in the market.

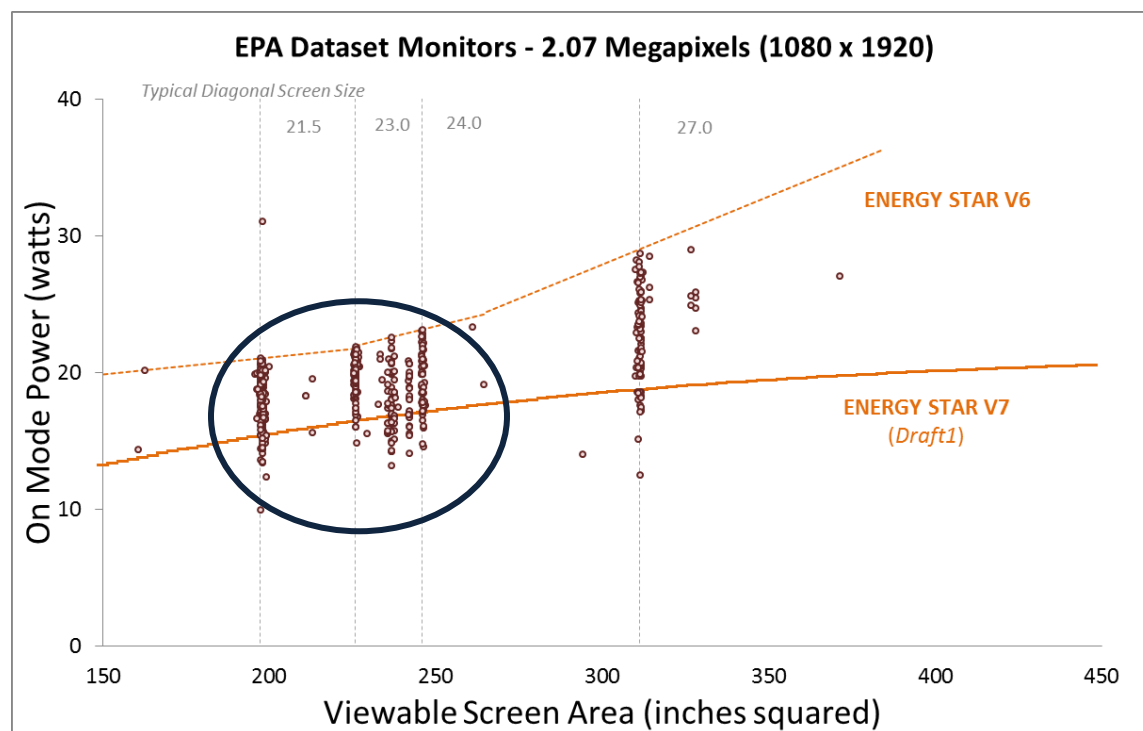


Figure 2. Draft 1 Dataset: 2.07 Megapixel Models

Source: EPA

Manufacturers should be commended that they have been able to increase the energy efficiency of their computer monitors rapidly to realize significant energy savings for consumers. However, the goal of the ENERGY STAR program is to provide value to purchasers by identifying the top performing models. The On Mode power requirements in Version 7 should account for available technologies and rapid product development cycles so that only the 25% most energy efficient models are able to qualify as ENERGY STAR when the specification first takes effect.

- b) EPA should consider new approaches for ensuring the ENERGY STAR mark differentiates the most efficient models on the market for rapidly evolving product categories, such as monitors.**

Similar to comments we have submitted previously during the ENERGY STAR Version 7 Television specification development process, we request ENERGY STAR work with LBNL, the CA IOUs, and other stakeholders to monitor the market penetration in real-time, where possible, to ensure that updates to

the specification are triggered in a timely fashion to account for the rapid uptake of the ENERGY STAR specification once the requirements are finalized. The backward-looking Unit Shipment Data process that EPA has historically relied on to track market penetration for all covered products may not be adequate for this rapidly evolving product category.

To prevent a situation similar to the Version 6 specification where a large majority of the market met the requirements within months of the effective date, EPA should also implement a provision that would automatically trigger a more stringent tier (e.g., the Most Efficient level) to take effect once market penetration hits 50 percent, as an example. This would ensure that ENERGY STAR meets its goal of providing value to purchasers by differentiating only the top performing models and not a majority of the market. Another approach EPA should consider for computer monitors, a product category which has historically shown a rapid uptake of a new specification, is to shorten the traditional 9 month period between finalization and effective dates of the Version 7 specification. This approach may allow the ENERGY STAR label to be relevant in the market longer by differentiating only the most efficient models, consistent with program principles.

**c) We support the On Mode requirements for computer monitors being based on both resolution and screen area.**

As resolution does not necessarily scale linearly with screen size, we support EPA's proposal to base On Mode requirements for computer monitors using both resolution and screen area. Given different applications for computer monitors of different screen resolutions, incorporating resolution into the requirement would ensure availability of models at most popular screen resolutions. We also support EPA's proposal to reduce the resolution coefficient from 6 to 2 watts per megapixel.

**d) We support the On Mode requirements for signage displays being based on both as-shipped luminance and screen area and support a cap for the luminance allowance to set an overall limit in total power consumption.**

Our testing and research agrees with EPA's assertion that there is a wide range of as-shipped luminance for signage displays depending on their application. In order to account for this variation in application, we support establishing On Mode requirements using both luminance and screen area. We additionally support EPA's proposal to establish a luminance "cap," based on available product data, to limit the power allowed in On Mode so that signage displays are not shipped in an unnecessarily higher luminance setting than it would otherwise be shipped in order to take advantage of this allowance.

**e) We support the On Mode requirements for signage displays including models larger than 61-inch diagonal screen size.**

Given that a significant percentage of signage display shipments in North America are 60-inches or greater (approximately 14% of total shipment), we strongly support the scope expansion to include signage displays greater than 61-inches. Figure 3 shows projected North American shipments of signage displays in 2016. It is important to note that the total shipments of these large signage displays are also projected to increase in the coming years so we support ENERGY STAR including these products to incentivize the implementation of energy saving technologies for these large power-consuming models.

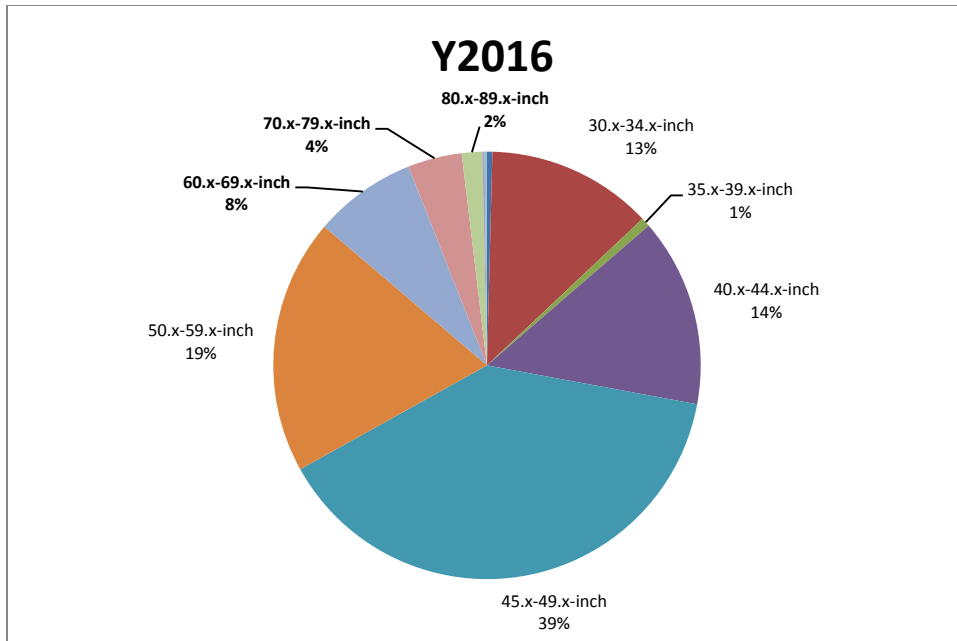


Figure 3 Signage Displays 2016 North American Shipments

Source: IHS iSuppli

**f) We support EPA’s proposal of a hyperbolic tangent function for the On Mode power requirements for computer monitors and signage displays.**

We support the Draft 1 proposal of use of a hyperbolic tangent function which creates a curve that flattens out versus the current requirement of a series of connected linear equations with increasing power consumption allowance scaling with increasing size beyond what is typical in most applications. A smoothed curve across all screen sizes, as has been finalized in the Version 7 Television specification, is preferable to the Version 6 approach since: (1) it does not contain joints at arbitrary points; (2) is a single, straightforward equation; and (3) limits the power consumption of the largest sized, most power consumptive models.

**2) EPA should consider including a power factor requirement of 0.9 or greater for high power products such as signage displays.**

Power factor correction helps to cut I-squared R losses in building distribution wiring significantly, yielding increased savings in large buildings. EPA should consider including a power factor requirement of at least 0.9 at 100% of rated load, which is consistent with the current internal power supply requirement in the Version 6.1 Computer specification.

**3) We support DOE’s update to the test procedure to ensure testing is done at factory default settings.**

Section 6.3 of the current ENERGY STAR test procedure requires that display screen brightness for all computer monitors and signage displays less than 30 inches be calibrated to 200 candelas per square

meter for on mode testing. In our testing, we found screen brightness values in default mode as-shipped to be significantly higher than the calibrated value of 200 candelas per square meter.<sup>4</sup> Since most users likely do not adjust brightness settings from “out of the box” settings, this method is likely to be not representative of real world power usage. Across all tested models, there was a 19 percent increase in reported power when luminance was tested its default setting as opposed to its calibrated setting. For this reason, we support on mode testing for monitors without adjusting luminance settings from their factory default settings, as proposed in the Draft 2 test method, to better reflect real-world conditions.

**4) EPA should consider including a marketing notation when distinguishing computer monitors from signage displays.**

In our brief review of websites of brands with both computer monitors and signage displays available for sale, the two products are marketed distinctly and completely separately. This is also true based on our review of online retailers. This distinction is logical given the different applications and markets of the two product types. We would ask EPA to work closely with its manufacturing partners to include a statement in the definitions referencing how a product is marketed when differentiating between the product types.

Selected Brand	Signage Display Nomenclature	Computer Monitor Nomenclature	URL
NEC	Large-Screen Displays	Desktop Monitors	<a href="http://www.necdisplay.com/">http://www.necdisplay.com/</a>
Samsung	Digital Signage	Monitors	<a href="http://www.samsung.com/us/business/#">http://www.samsung.com/us/business/#</a>
LG Electronics	Commercial Displays	Monitors	<a href="http://www.lg.com/us">http://www.lg.com/us</a>

*Table 1 Manufacturer Website Marketing Descriptions of Electronic Displays*

Source: Various

Given the drastically different On Mode requirements for computer monitors and signage displays, as shown in Figure 4, it is crucial that the product categories are properly defined with no room for misinterpretation such that a computer monitor could be subject to the signage display requirements.

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<sup>4</sup> Table 4.1. *Electronic Displays Codes and Standards Enhancement (CASE) Initiative for PY 2013: Title 20 Standards Development*. California Statewide Utility Codes and Standards Program, July 2013.

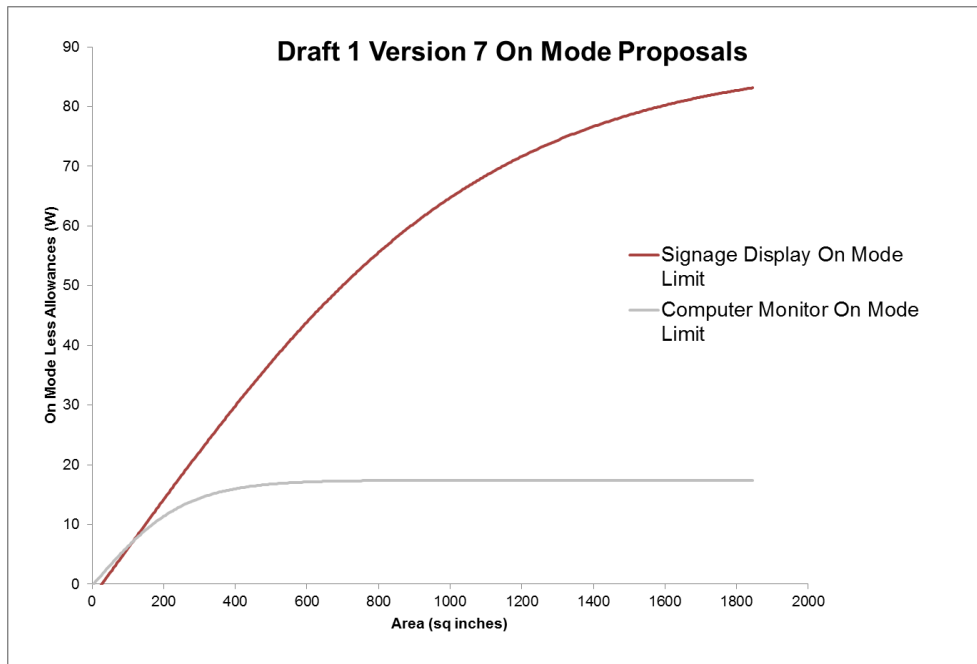


Figure 4 On Mode Limits: Draft 1 Proposal

Source: EPA

**5) EPA should consider aligning the sleep mode reference with the standby modes outlined in the Version 7 Television specification.**

For clarity and consistency, EPA should consider for this specification replacing the Sleep Mode term in the Draft 1 specification with the following terms in the recently finalized Version 7 Televisions specification:

- Standby-Passive Mode.
- Standby-Active Low Mode.
- Standby Active High Mode.

Since many of the same features and functionalities occur in the different standby modes for electronic displays and televisions, aligning the terminology and definitions (where appropriate) would be clearer to consumers and other market actors.

**6) EPA should not move to a total energy consumption (TEC) approach for computer monitors without robust product data and publically available information. EPA should continue setting qualification requirements based on a modal approach.**

We understand that EPA plans to move forward with a TEC approach in the Draft 2 specification. In the absence of robust, publically available data, we are not in favor of a TEC approach given the uncertainty with moving to such an approach. We recommend instead maintaining the modal requirements along with a proposed TEC calculation that would be reported only for illustrative purposes at this time and not subject to any minimum requirements in the specification. EPA could collect the data, analyze it, and

then consider a TEC requirement for the Version 8 specification development that (1) provides flexibility to manufacturers, (2) is clear to consumers and other market actors, (3) is based on robust power consumption data; and (4) uses well-vetted duty cycle assumptions.

In the December 11 Public Meeting, EPA mentioned that there may be products that would be able to meet aggressive On Mode requirements but not qualify for ENERGY STAR because they do not meet Sleep Mode requirements. However, to date, we have not been made aware of significant data to show that this would be an issue. We agree that the TEC approach would allow manufacturers some flexibility while still continuing to drive efficiency only if there is a robust dataset highlighting this problem. Additionally, given the varied duty cycles for computer monitors depending on application and use case (office, home office, gaming, primary screen, extended desktop, etc.), it is not clear to us that there is an accepted typical duty cycle for all monitors.

In fact, based on our analysis of the latest ENERGY STAR dataset, which EPA has stated is representative of the total market, we have only seen evidence of a small handful of models meeting the proposed On Mode requirements but not the proposed Sleep Mode requirements. Of the 924 Ac-powered computer monitors (excluding enhanced performance displays) in EPA's dataset, 50 models (5%) have a reported Sleep Mode over 0.5 W (the proposed requirement assuming no adders). Of those 50 models, 41 of them would not qualify for the proposed On Mode limit. That leaves a total of 9 models in EPA's dataset of 924 representative models, or **less than 1%** of the market, where a TEC approach may help. This number is likely lower, since we did not factor in proposed Sleep Mode adders for additional features such as networking or touch screen. If there are new features or functions in Sleep Mode that require even more power as EPA suggests, we welcome EPA presenting the data so that it may be considered by stakeholders.



In conclusion, we would like to reiterate our support to EPA's efforts for establishing new performance requirements for electronic displays in this ENERGY STAR specification update. We look forward to working with EPA and DOE closely throughout this process and encourage careful consideration of our recommendations.

Sincerely,



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