



July 9, 2014

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: Draft 1 Version 7 ENERGY STAR Television Specification

Dear Ms. Radulovic:

This letter comprises the comments of the Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SCGC), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) in response to the U.S. Environmental Protection Agency's (EPA) Draft 1 Version 7 ENERGY STAR Television 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 requirements that accurately reflect the climate and conditions of our respective service areas, so as to maximize these 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 establish new ENERGY STAR performance requirements and potentially develop new test methods for televisions and ask EPA and DOE to consider carefully the following recommendations.

- 1. EPA should ensure that the on mode power requirements in Version 7 represent the most efficient quartile of the market when the specification takes effect.**

The proposed on mode requirements in the Draft 1 specification are reasonable starting points, and we appreciate the significant effort EPA made in scrubbing the dataset to reflect the current test procedure (e.g., interpolation of Automatic Brightness Control [ABC] values) in order to propose these on mode levels. However, EPA should carefully consider on mode requirements that would represent the top 25% of the market when the specification takes effect. Based on EPA's analysis, the on mode proposal

captures 15% of the current ENERGY STAR dataset of high definition TVs.<sup>1</sup> We ask EPA to consider the rapid product development cycles and technical feasibility of the requirements to ensure that when the Version 7 specification takes effect in the Summer 2015 only the top performers will be identified as ENERGY STAR, consistent with program principles.

We note that during the development of the Version 6 specification, the proposed on mode power requirements represented the top 15% of the models in the dataset used by EPA at that time.<sup>2</sup> However, sales data, as presented in comments submitted by Northwest Energy Efficiency Alliance (NEEA) and Sacramento Municipal Utility District (SMUD), indicates that in June 2013, when the Version 6 specification first took effect, three quarters of all models sold in the United States met the Version 6 ENERGY STAR requirements. Currently, with only a year since the new specification took effect, sales data indicates over 85% of models sold meet current Version 6 requirements. Manufacturers should be commended that they have been able to increase the energy efficiency of their products 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 and emerging technology options 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 in Summer/Fall 2015.

**2. Before setting requirements for ultra high definition (UHD) TVs, EPA should better understand the power requirements of these TVs in order to set appropriate on mode levels to incentivize energy efficiency for UHD TVs that are growing in market share.**

Various market research firms and technology websites/publications have shown that UHD TVs have been gaining in market share in recent years, especially in the larger screen sizes. For instance, 15% of the 175 TV models listed for sale at a major electronics retailer were listed as “4K Ultra HD.”<sup>3</sup> Most major manufacturers are promoting UHD TVs prominently on their websites and at trade shows and other promotional events.<sup>4,5,6</sup> Comments submitted by NEEA and SMUD include a more detailed analysis of sales data for UHD TVs that indicate growing market share. As this technology matures and the premium price drops over time, we can expect to see a more rapid uptake of these TVs in the market. Therefore, we approve of ENERGY STAR considering this feature in the Version 7 specification to help incentivize the development of more energy efficient UHD TVs.

We analyzed on mode data on UHD TVs from the California Energy Commission’s (CEC) Appliance Database (93 models) and from ENERGY STAR’s data collection efforts (14 models) and displayed the models in Figure 1 below. Within similar sized UHD TVs there is wide variability in on mode power consumption. For instance, for 65-inch models (1780 square-inches), the range of reported on mode power is from 116 to 219 watts. Additionally, in general UHD TVs consume significantly larger amounts of power than similar sized regular HD (1080p) TVs (not displayed).

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<sup>1</sup> Slide 43. EPA Stakeholder Meeting. June 17, 2014.

<sup>2</sup> Page 2. Comment Response Document. May 16, 2012.

<sup>3</sup> Best Buy Website. Accessed on July 2, 2014. <http://www.bestbuy.ca/en-CA/category/televisions/21344.aspx?path=703daa1fe0486e6afbde638d0a81127aen01>

<sup>4</sup> <http://www.lg.com/us/ultrahdtv>

<sup>5</sup> <http://www.samsung.com/us/topic/4k-ultra-hd-tv>

<sup>6</sup> <http://www.marketwatch.com/story/lg-electronics-launches-broad-2014-ultra-hd-4k-led-tv-line-up-2014-06-24>

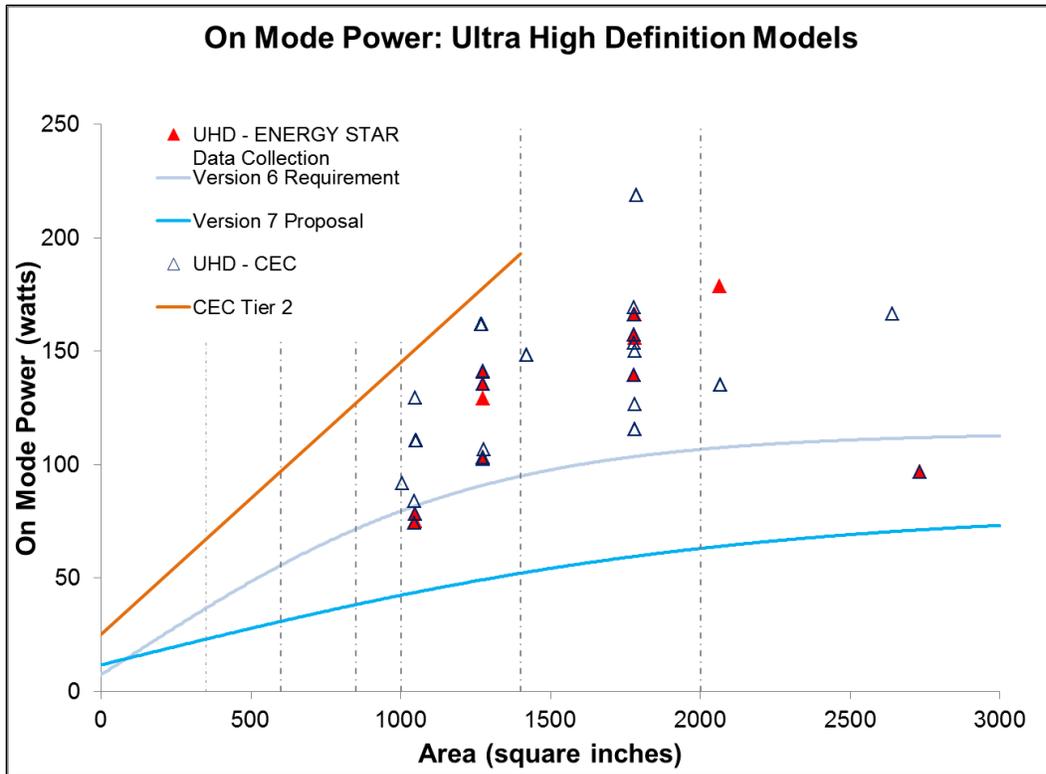


Figure 1. Ultra High Definition TVs: On Mode Power

Source: CEC and ENERGY STAR Datasets

Given the wide variability of on mode power consumption for UHD TVs of similar size, EPA should work closely with its manufacturing partners to understand the technologies that account for this variability. We recognize that there is a lack of available on mode data for UHD TV larger than 58-inches since submission to the CEC Appliance Database is not required for TVs greater than 1400 square inches (sq-in). However, since all TVs less than 1400 sq-in for sale in California must be submitted to CEC, the CEC dataset of 93 models should be considered reflective of the UHD TV market up to 58-inches and be used to help develop potential UHD requirements. EPA should be careful to exclude any CEC listed models from their analysis that are professional displays, or “television monitors” as defined by the CEC, that are not within the scope of this specification. For TVs larger than 58-inches and for newer UHD models less than 58 inches that are not yet on the market, EPA should continue to collect data from their manufacturing partners as well as other publicly available product databases.

In establishing requirements for UHD TVs, we encourage EPA and its partners to collect test data for UHD TVs using native UHD content to better understand the power requirements to set appropriate levels. EPA should compare those results with the CEC dataset, reflecting 1080p content that was upscaled, or upconverted, to confirm that the CEC reported data is really the “worst case” as indicated by manufacturers during the June 17 Stakeholder Meeting. Additionally, CEC should collect data with any ABC feature disabled to understand the power consumed by UHDs when ABC is disabled. Furthermore, EPA should scrub the dataset to ensure the models used for the data analysis reflect currently available models since some manufacturers questioned the veracity of some of the reported data during the stakeholder meeting.

Based on a scrubbed, representative dataset and additional test data, EPA should consider requirements to incentivize the reduction of on mode power consumed by UHD TVs. Lacking sufficient data, EPA should consider collecting including in Version 7 through reporting requirements for UHD TVs with the intention to set requirements in a future specification revision process. While these TVs are gaining in market share as indicated previously, UHD TVs are still a very low percentage of the overall market at this time.

3. **We assume the TV is in standby mode for a vast majority of the day, therefore, ENERGY STAR should better understand the power draws in the various standby modes in order to set appropriate requirements that incentivize energy savings.**

- a. Standby Passive

Manufacturers should be congratulated for significantly reducing the power consumed by TVs in standby passive mode over the past decade. Based on our analysis of the models listed with CEC since 2012, as shown in Figure 2, **98%** (3416 of 3493) of TV models have a reported standby passive mode of 0.5 watts or less and would meet EPA’s proposed requirement. In other words, almost all TV models sold in California since 2012 meet ENERGY STAR’s proposal. EPA should consider a standby passive requirement to differentiate the most efficient models that will be available on the market. EPA should consider a 0.3 watt requirement, which would still represent over 50% of models.

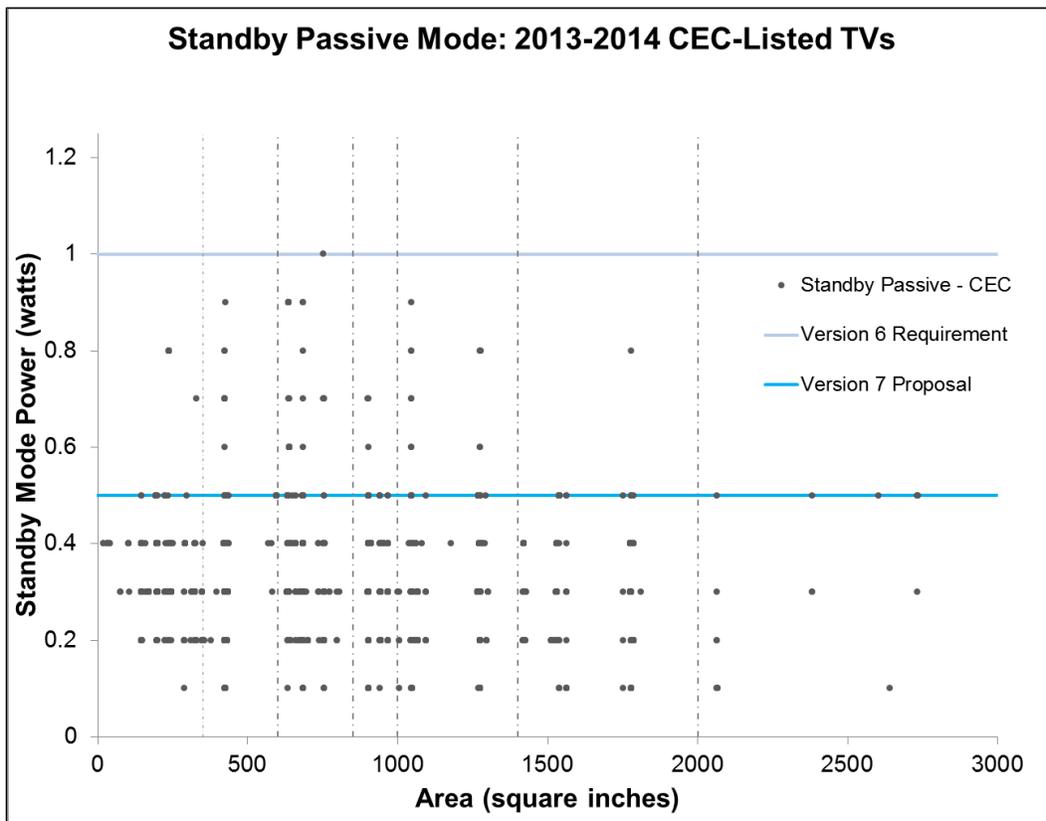


Figure 2. CEC TVs Listed in 2013 and 2014: Standby Passive Mode

Source: CEC Dataset

## b. Standby Active Low

Many TVs are no longer simply “off” (i.e., standby passive mode) when the TV is not displaying an image, but connected in varying degrees to a network and consuming significantly more power than in standby passive mode. It is important for ENERGY STAR to understand the power consumed and the typical time spent in these other, higher power consuming standby modes. Before EPA set standby active low mode requirements to incentivize energy savings in this mode, EPA should work with its partners throughout this specification development process to understand 1) the power demands for network connected TVs, 2) what processes account for wide variations reported in the data, and 3) how often a network connected TV is in a high power-consuming standby mode.

Based on the current ENERGY STAR Qualified Products List (QPL), as displayed in Figure 3a on a logarithmic scale, there is a wide variation of reported power in standby active low mode. Of the 233 models with reported standby active low mode values, 39 models (from only two manufacturers) had reported values 17 watts or above. The remaining 194 models had reported values 1 watt or below. There is wide variation in the reported values for this mode suggesting testing discrepancies and/or various power consuming activities in the background for those models with high reported values. From the discussion during the June 17 Stakeholder Meeting it appears there is some testing and reporting discrepancies among manufacturers when testing standby active low mode. Discussion also centered on the presence of “full network connectivity” and setting separate requirements for those TVs with and without full network connectivity. Additionally, when looking only at those TV with a reported value in standby active high mode greater than 17, the power consumed scales with size, as shown in Figure 3b. If there is no image displayed on the screen, we are unclear on what the additional power needs that scale with screen size in standby mode.

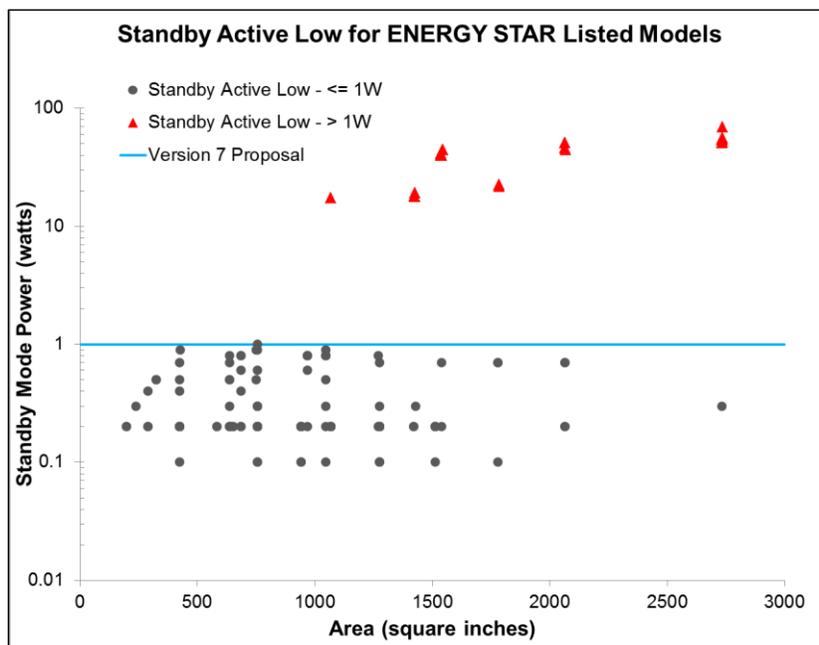


Figure 3a. Standby Active Low Mode: Logarithmic Scale

Source: ENERGY STAR Qualified Products List

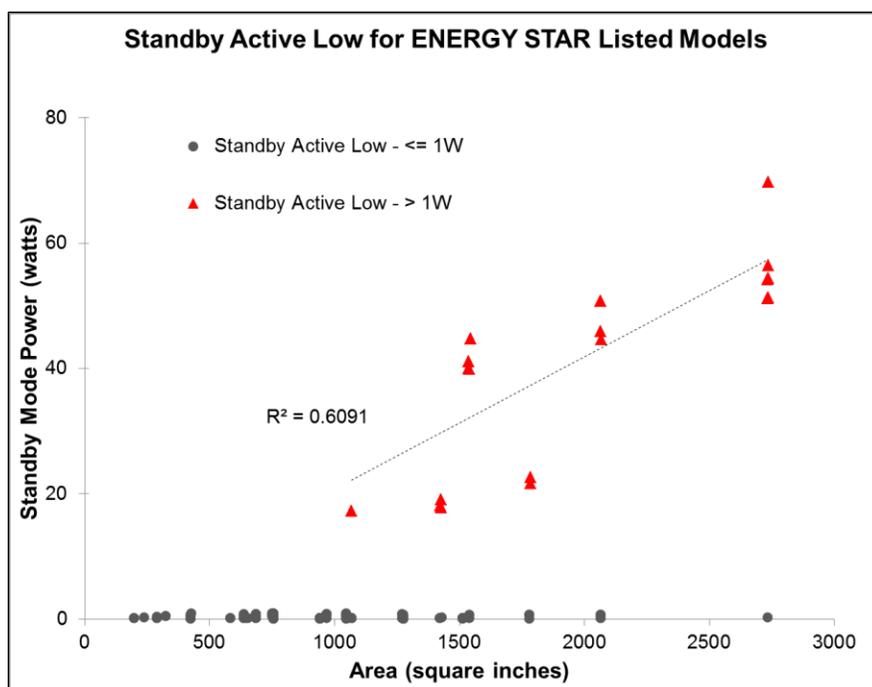


Figure 3b. Standby Active Low Mode: Normal Scale

Source: ENERGY STAR Qualified Products List

For this issue, we ask EPA to better understand what is requiring some TVs to draw almost 70 watts of power in a mode when the TV is not displaying an image and the consumer presumes the TV is “off.” Also, we ask EPA to better understand how often a TV with full network connectivity is in this mode. The current assumption by DOE is that TVs are in standby mode (either active low or passive) for 19 hours a day. If a network enabled TV is consuming almost 70 watts of power for 19 hours a day and 104 watts (reported on mode for this TV) for the remaining 5 hours, it could be drawing over double the amount of energy in standby than in active mode over the course of a day. In addition, since standby active *high* mode (i.e., network connected, actively transferring data) is currently not measured by the test procedure but presumably consumes more than standby active low, a network connected TV could be consuming even more energy in standby. Smart TVs, or TVs with internet connectivity and smart features, are gaining in popularity and market share. As an example, over 60% of the 175 TV models listed for sale at a major electronics retailer were listed as a “Smart TV.”<sup>7</sup> Therefore, ENERGY STAR should better understand how the power consumer by a TV in standby modes to ensure energy savings are realized by consumers and to safeguard excessive energy consumption in these modes when the consumer assumes the TV is “off.”

It was suggested during the stakeholder meeting that EPA look at data where there are differences between reported standby passive and standby active low modes as these would be the models that were tested properly according to the test procedure (i.e., with full network connectivity). When looking at these models from the QPL, there is still wide variability with differences ranging from a few *tenths of a watt* to almost 70 watts between passive and active low standby modes. It was also suggested that any network connected TVs that were tested accurately to the test procedure would

<sup>7</sup> Best Buy Website. Accessed on July 2, 2014. <http://www.bestbuy.ca/en-CA/category/televisions/21344.aspx?path=703daa1fe0486e6afbde638d0a81127aen01>

have reported values in standby active low mode significantly higher than 1 watt. ENERGY STAR should make sure the data being used in developing standby mode power requirements have been testing accurately to the test procedure. Additionally, ENERGY STAR should ask manufacturers to confirm that any representation of efficiency in modes specified by the test procedure have been tested in accordance to Appendix H to Subpart B of 10 CFR Part 430 - Uniform Test Method for Measuring the Energy Consumption of Television Sets. Given the number of network connected equipment worldwide that are able to meet a 1 watt requirement in standby, at this time we would support EPA's proposal for standby active low mode. If there are certain features, such as a Quick Start feature, that is requiring the TV to consume significantly more power in standby, EPA should collect test data to better understand power requirements of such features.

#### c. Standby Active High

While we understand that the test procedure does not currently account for standby active high mode, we ask EPA and DOE to work with its partners throughout this specification development process to establish a test procedure to measure power consumption when a network enabled TV is actively transferring data and get a better understanding of how often the TV would be in such a mode. If standby active low mode can consume up to 70 watts of power, we would assume the standby active high could consume a similar significant amount of power. The assumption in the past, before Smart TVs were prevalent, was that TVs were in standby active high relatively infrequently for channel guide updates or other infrequent software updates. However, given that Smart TVs are more prevalent and given the high power draw of Smart TVs that are NOT transferring data, ENERGY STAR should understand what energy may be consumed in other standby modes not accounted for in the current test procedure. A great example of ENERGY STAR working with its partners was the development of the download acquisition mode (DAM) test procedure. A similar effort (for a similar mode) should be undertaken for Smart TVs in the consumer space.

In summary, as Smart TVs increase their market presence, more TVs will be network connected. It is important to understand what is going on with these TVs when there is no picture displayed and the consumer believes the TV is "off."

#### **4. In order to better understand the energy consumed by TVs available in the market, EPA and DOE should consider updating the test procedure to ensure it covers features and modes not currently captured or not captured accurately.**

EPA and DOE should consider updating the test procedure to include power measurements of the following modes and features:

- UHD: Testing UHD TVs should include testing native UHD video content and testing 1080p video content with an upscaling player.
- Standby Active Low: Necessary clarifications to the standby active low mode test procedure should be made to avoid the inconsistencies that are present with the current test procedure. Manufacturers should resubmit standby active low data if initially tested incorrectly.
- Standby Active High: Test provisions should be included to measure power consumed in this mode.
- Annual Energy Consumption: Updates to the Annual Energy Consumption (AEC) metric in the test procedure should be considered *as appropriate* to accurately reflect the time spent in the different standby modes for newer, network connected TVs.

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

Sincerely,



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