



September 29, 2014

Ms. Verena Radulovic  
United States Environmental Protection Agency  
Office of Air and Radiation  
1200 Pennsylvania Ave NW  
Washington, DC 20460

**Subject: Follow up Comments to the ENERGY STAR Draft 2 Version 7.0 Proposal**

Dear Ms. Radulovic,

On behalf of the Northwest Energy Efficiency Alliance (NEEA) and Sacramento Municipal Utility District (SMUD), we respectfully submit comments in regards to the ENERGY STAR Draft 2 Version 7.0 Television specification issued September 2<sup>nd</sup>, 2014.

As organizations involved in supporting the introduction and commercialization of energy efficient products into the market, we support EPA's efforts to update the ENERGY STAR Televisions specification. The ENERGY STAR specification promotes the adoption of energy efficient products by providing valuable product differentiation within the highly competitive television market. These efficient models will save US consumers and businesses substantial sums of money from reduced electricity bills and help to reduce greenhouse gas emissions. Our TV programs have provided financial incentives and marketing support to encourage manufacturers and retailers to educate, promote and sell the most energy-efficient TVs on the market. We recognize ENERGY STAR as a powerful tool for promoting market transformation towards more efficient products. Thus, we have a strong interest in continuing to support the development of a strong ENERGY STAR specification.

A summary of our primary recommendations are:

- Revise the existing EPA dataset by removing all models released before April 2013 and develop new On Mode Power requirements using a 16% pass rate (Recommendation #1);
- We support EPA's decision to provide a 55% adder for UHD models which will encourage manufacturers to reduce UHD energy consumption by meeting ENERGY STAR requirements. We recommend that EPA decrease this adder over time, rather than have it expire in 2017 (Recommendation #2);

- Continue to explore why some models have power levels significantly higher than 10W in Standby Active Low and revise test procedures as necessary to ensure that all TVs are being tested in a similar manner. (Recommendation #3);
- Begin to characterize the energy consumption of Standby Active High mode (Recommendation #3).
- We support EPA's proposed recommendation of a 0.3W requirement for Standby Passive mode (Recommendation #4).
- Consider updating the TV test procedure to more accurately capture features and operating modes that are not currently captured by the existing test procedure (Recommendation #5).

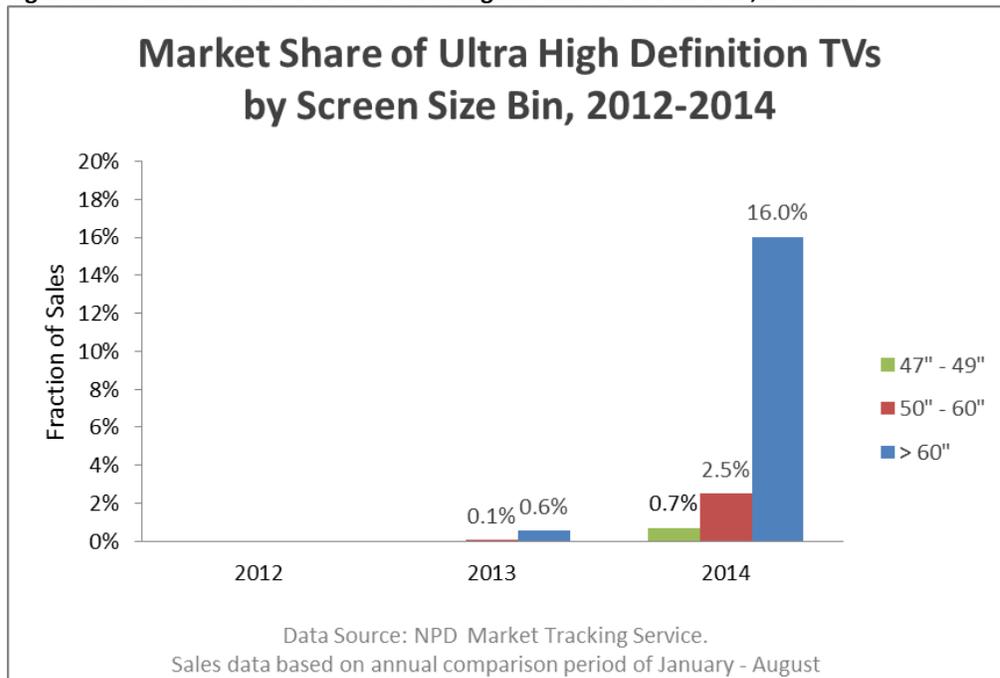
**1) We support EPA's use of a 16% pass rate to determine On Mode Power requirements, which accounts for improvements that will occur in the market prior to the specification's effective date. However, in order to accurately represent models that are currently available in the market, we recommend that EPA revise their dataset by eliminating all models available prior to April 2013.**

In such a fast-paced industry as televisions, we recognize the challenge of setting specification requirements 12 months ahead of its effective date while simultaneously maintaining EPA's goal of capturing 25% of the market. If implemented correctly, we believe that setting a 16% pass rate will result in market penetration rates at or near EPA's goal of roughly 25% when the specification takes effect. However, stringent pass rates can only be effective if they are combined with a dataset that accurately reflects products on the market. If older, less efficient models are included in the Energy Star test datasets, in reality the 16% pass rate is significantly less stringent than it appears to be. To ensure that the EPA dataset reflects the current market, we recommend that EPA eliminate all models that were available before April 2013. These models, which comprise roughly 20% of the current dataset, are part of the 2012 TV product cycle and therefore are not expected to be sold in 2014. We recommend that EPA remove these older models and then re-calculate the On Mode Power requirements based on a 16% pass rate. Without a dataset that reflects that current market, penetration for Version 7 is likely to be significantly higher than intended, which has happened for a number of the previous ENERGY STAR versions.

**2) We support EPA's efforts to include Ultra High Definition (UHD) televisions in the Version 7 specification through the use of an adder. We believe that the 55% adder will encourage manufacturers to produce highly efficient UHD models that meet the ENERGY STAR requirements. Instead of having the UHD adder expire in 2017, we propose that EPA include language to reduce it over time.**

Ultra High Definition (UHD) televisions consume substantially more energy than HD TVs when displaying standard HD content. Although UHD TVs represent only 1.2% of total US TV sales, they are expected to achieve rapid growth in the next few years, particularly for larger screen sizes. Within the >60" TV size bin, UHD market penetration increased by over 25 times in the past year from 0.6% in 2013 to 16.0% in 2014. Similarly, TVs within the 50-60" size bin made substantial gains in 2014.

**Figure 1: US Market Penetration of Ultra High Definition Televisions, 2012-14**<sup>1</sup>

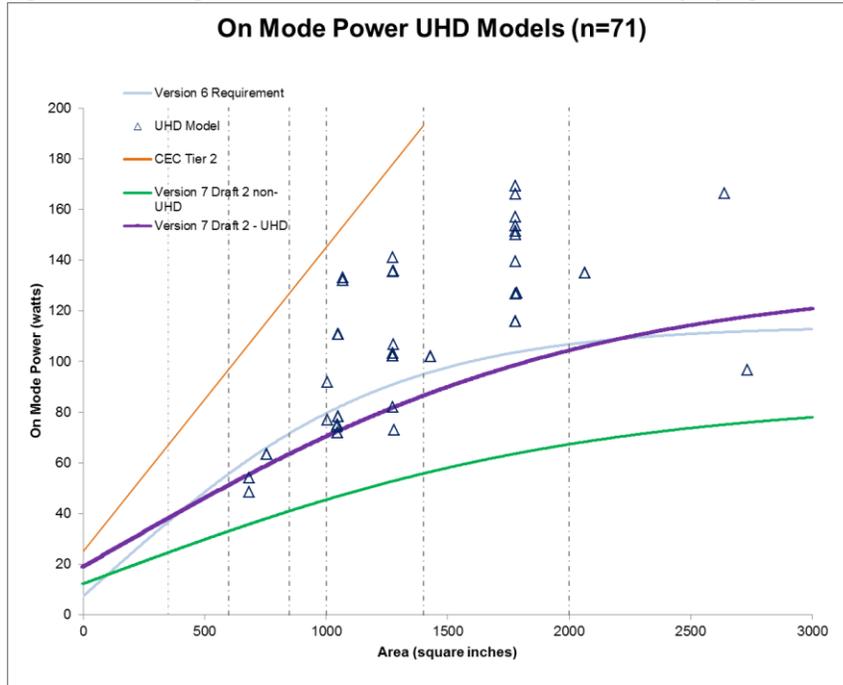


As UHD technology costs continue to decline, we expect to see cascading effects and greater UHD adoption in smaller TV sizes. While UHD content is not yet readily available, most of these UHD TVs improve picture quality by ‘upconverting’ existing HD content to UHD through a process of pixel interpolation.<sup>2</sup> We analyzed on mode data of UHD TVs from CEC’s Appliance Database (60 models) and from ENERGY STAR’s Qualified Products List (11 models) and found a number of models that already meet the Draft 2 proposal with the extra UHD power allowance (see Figure 2).

<sup>1</sup> Sales data based on January – August intervals of each calendar year. Sales are based on the monthly sales data for the Northwest (WA, OR, ID, and MT). Since retailers make stocking decisions on a national basis, we assume that this data is representative of national trends.

<sup>2</sup>Upconverting HD content is a requirement of CEA’s recently updated ‘Characteristics for Ultra High-Definition Displays’, released June 25, 2014. <http://www.ce.org/News/News-Releases/Press-Releases/2014/CEA-Updates-Characteristics-for-Ultra-High-Definit.aspx>

**Figure 2: Ultra High Definition TVs: On Mode Power when displaying HD content**



Source: CEC Appliance Database and ENERGY STAR QPL Dataset

While the UHD market is growing rapidly, it still reflects a very small fraction of the market. We believe the 55% adder provides a sufficient incentive for manufacturers to reduce UHD energy consumption. Because reducing UHD energy consumption is an iterative process, we support the gradual decrease in the UHD adder instead of its abrupt expiration in 2017. Therefore, we suggest that EPA include language to reassess the adder in mid-2016, with a revised adder taking effect in March 2017 when the 2017 models become available.

In addition, we support ENERGY STAR’s decision to propose UHD requirements based on a minimum native vertical resolution. In the absence of an industry accepted definition, we support EPA’s proposal provided that the minimum native vertical resolution is unambiguous in differentiating UHD from non-UHD models. Under no circumstances should non-UHD be eligible for the extra allowance.

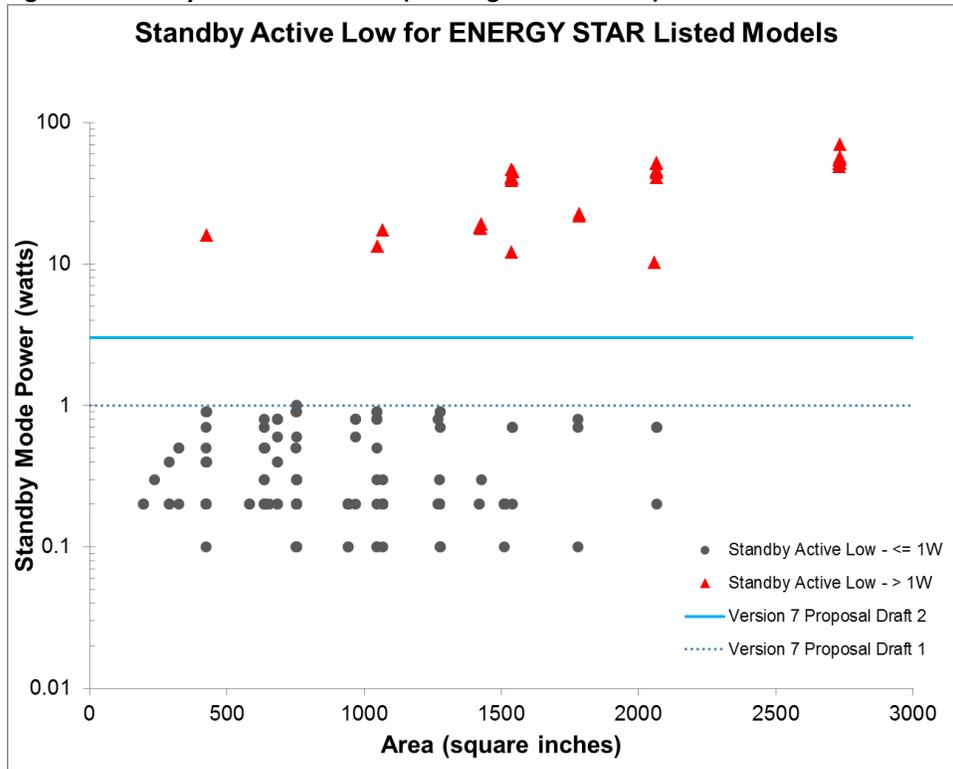
On the September 16 ENERGY STAR webinar, one stakeholder suggested that EPA should consider a maximum native vertical resolution to effectively exclude super UHD, or 8K TVs, from the specification since super UHD TVs will require a greater power allowance. We recommend that ENERGY STAR not include a maximum resolution and instead allow the market to innovate to meet the current requirements. Once data on super UHD TVs becomes available, ENERGY STAR can consider additional or modified requirements to incentivize efficient super UHD TVs.

**3) We support EPA’s 3W requirement for network connected TVs in Standby Active Low mode. However, we recommend that EPA continue to explore why some models have power levels significantly higher than 10W in Standby Active Low and revise test procedures as necessary to ensure that all TVs are being tested in a similar manner.**

We support EPA’s proposed 3W Standby Active Low requirement. Products such as Roku and Apple TV use less than 3W in Standby Mode, and mobile devices such as tablets and phones use significantly less than 3W while maintaining a network connection and updating apps. This 3W requirement provides consistency to manufacturers by harmonizing with the European Union’s network standby requirement effective in 2017.

Over 30% of all TVs (and roughly half of TVs 40” or greater) now have network connectivity capabilities. In this case, the TVs are no longer simply “off” (i.e., standby passive mode) when the TV is not displaying an image, but are connected in varying degrees to a network and consuming significantly more power than in standby passive mode. Based on the current ENERGY STAR QPL, there still remains a wide variation of reported power for those models with standby active low mode (see Figure 3). However, it is still unclear why this is the case, although it is suspected that this is due to the Quickstart function being enabled. Of the 241 models with reported standby active low mode values, 41 models (all from two manufacturers) have reported values of 10 watts or above (see Figure 3). The remaining 200 models had reported values 1 watt or below (including Smart TVs from these same two manufacturers).

Figure 3. Standby Active Low Mode (note logarithmic scale)



Source: ENERGY STAR Qualified Products List

This wide variation in the reported values for Standby Active Low suggests that there are testing discrepancies or additional power consuming activities in the background for those models with high reported values. We encourage EPA and DOE to identify and correct any testing discrepancies to ensure the data used in developing standby active low mode requirements is not corrupted, as suggested by some stakeholders.

TVs with network connectivity have the potential to consume more energy in Standby mode than in Active. For example, 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 substantially more energy in standby.

In addition, we also request that EPA require reporting of the following information regarding Standby Active High to assess the frequency and duration of a TV in Standby Active High mode:

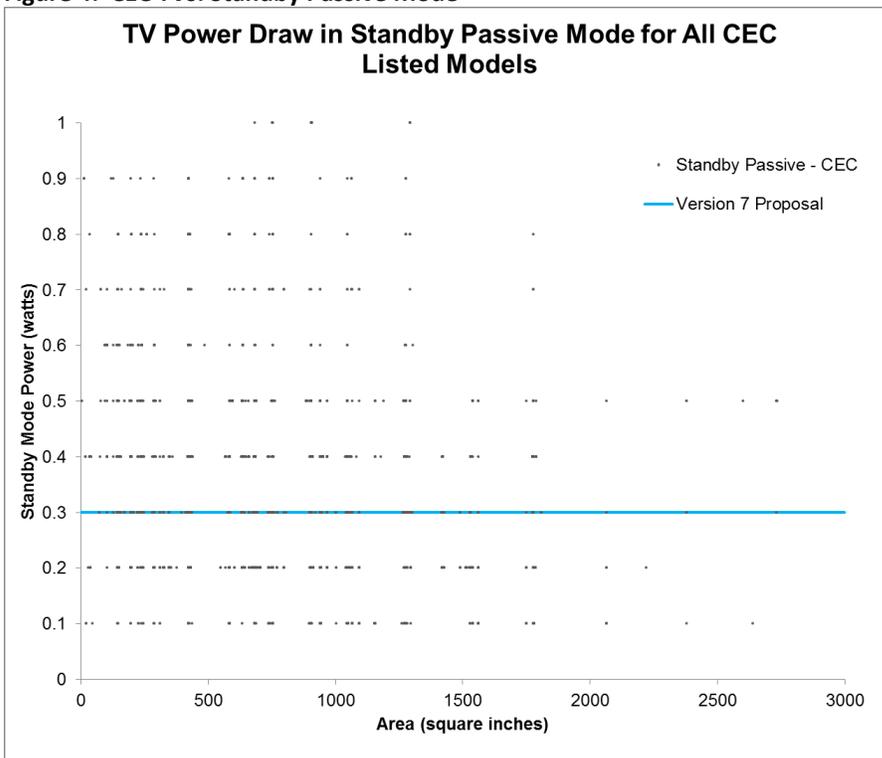
- What features or functions require the TV to enter standby active high mode?
- How frequently does each of these functions occur?
- For each function, what is the typical duration for this event before the TV returns to Standby Active Low mode?
- What is the maximum time that a TV could be in standby active high mode per event?

As TVs with network connectivity continue to gain market share, it is critical that EPA develops a more complete understanding of their energy consumption in Standby mode. If left unaddressed, energy consumption in Standby mode could offset substantial efficiency gains made in On Mode power over the five years.

**4) We support EPA’s 0.3W requirement for Standby passive mode.**

Based on our analysis of the updated CEC appliance database, over 65% of TV models in the CEC database meet EPA’s proposed standby passive mode requirement of 0.3 Watts (see Figure 4). We support these more stringent requirements for Standby passive mode.

**Figure 4: CEC TVs: Standby Passive Mode**



Source: CEC Appliance Database

**5) We recommend that EPA and DOE consider updating the TV test procedure to more accurately capture features and operating modes that are not currently captured by the existing test procedure.**

We recommend that EPA and DOE update the test procedure to include power measurements for the following modes and features:

- Ultra-High Definition: This should include testing native UHD video content and 1080p content with an upscaling player.
- Standby Active Low: Provide clarity to the definition to address and eliminate the discrepancies found in the existing ENERGY STAR test data. 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: The existing energy consumption methods only consider time spend in On Mode and Standby Passive Low. We recommend revising Standby usage assumptions account for both Standby Passive and Standby Active Low modes.

We appreciate your consideration for these comments and look forward to ongoing collaboration.

Sincerely,



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*Northwest Energy Efficiency Alliance*



*Cheri Davis*  
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