



March 2, 2012

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 6 Proposal**

Dear Ms. Radulovic,

On behalf of the Northwest Energy Efficiency Alliance (NEEA), NV Energy, Pacific Gas and Electric Company (PG&E), Sacramento Municipal Utility District (SMUD), and San Diego Gas and Electric (SDG&E), we respectfully submit comments in regards to the ENERGY STAR Draft 2 Version 6.0 Television specification issued February 3<sup>rd</sup>, 2012.

The Business and Consumer Electronics (BCE) program managers support EPA's efforts to establish a new Version 6 specification for Televisions. We strongly support EPA's approach to developing stringent On Mode Power requirements and their decision to align their test method for Automatic Brightness Control (ABC) with DOE's current rulemaking.

As sponsors of utility incentive programs for TVs, we work with retailers and manufacturers to help consumers become more informed about the benefits of purchasing energy-efficient TVs. The BCE Program provides financial incentives and marketing support to encourage manufacturers and retailers to educate, promote and sell the most energy-efficient TVs on the market. We currently promote products that meet and exceed existing and future ENERGY STAR specification levels.

**1) We commend EPA for its approach in developing On Mode Power requirements and believe that the 15% qualifying rate properly accounts for natural market adoption of efficient models between now and Version 6's effective date in early 2013. We also suggest that EPA use forecasts to make its dataset reflective of the market at the specification effective date.**

We support EPA's use of a hyperbolic tangent function to establish On Mode Power requirements. This method creates a simplified, smoothed curve with relatively equal qualifying rates across all screen sizes. It incorporates the consumer shift towards larger screen sizes while incorporating modest limits on total energy consumption. We believe that this approach strikes the right balance by maintaining the spirit of the Version 5 cap while still allowing larger efficient TVs to qualify for ENERGY STAR.

In such a fast-paced industry, 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. We believe the 15% qualifying rate adequately accounts for natural market adoption of efficient models between when the specification will become final (scheduled for April 2012) and the proposed effective date. This approach will help EPA towards its goal of capturing the top 25% of TVs once the Version 6 specification becomes effective in early 2013. We request that EPA continue to track market information throughout this process and adjust On Mode requirements as necessary to ensure only the top 25% of models meet the requirements by the date the Version 6.0 specification becomes effective.

We acknowledge the challenges of setting requirements in such a rapidly changing market, and support the development of the On Mode Power requirements based on an existing dataset. However, we suggest that EPA use forecasts or other forward-looking analyses to modify the existing dataset so that it better reflects the future market. For example, a recent study by Lawrence Berkeley National Laboratory suggested that by 2014, LED backlit TVs would account for 75% of worldwide TV sales as they continue to replace CCFL backlighting.<sup>1</sup> This figure is likely to be even higher in the US and other developed markets. However, roughly 40% of the current test dataset is comprised of CCFL-backlit models, which will not reflect the TV market two product cycles from now. We suggest EPA incorporate these forecasts as they develop a test dataset and also account for new TV features, such as internet connectivity and 3-D viewing.

## **2) We commend EPA's decision to harmonize its ABC test method with DOE and establish an Automatic Brightness Control (ABC) test method that accurately reflects in home TV viewing conditions**

We support EPA's decision to revise the ABC test method so that more accurately reflects in home TV viewing conditions. To ensure that the test method reflects this, we recommend that the test procedure reflects illuminance levels where the majority of

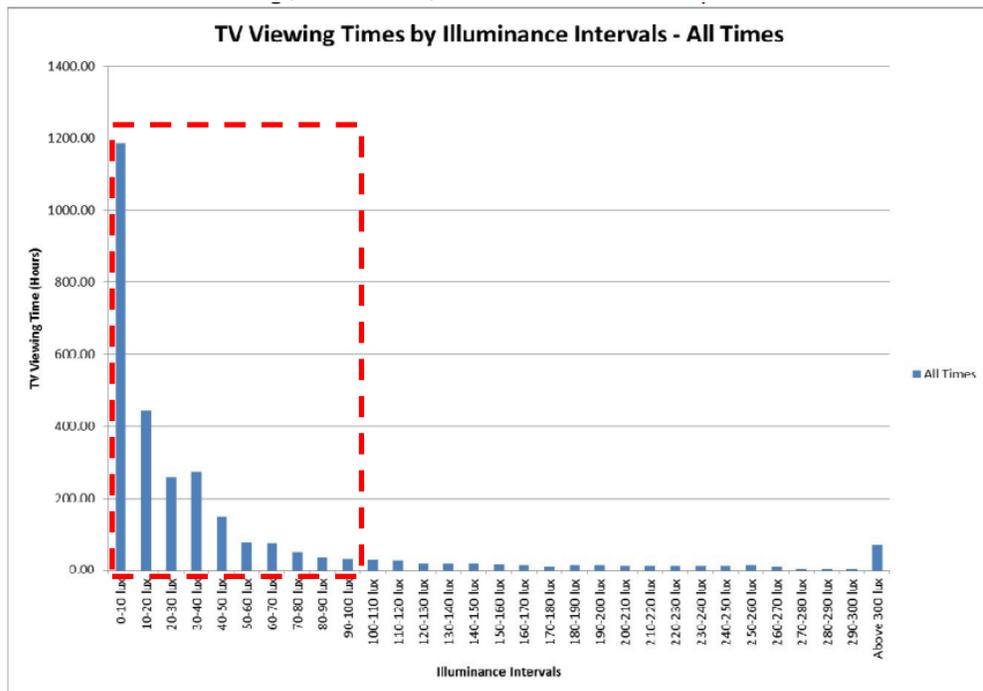
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<sup>1</sup> Park et al. 2011. TV Energy Consumption Trends and Energy-Efficiency Improvement Options . LBNL-5024E

TVs are watched. Based on a December 2011 CLASP study<sup>2</sup> of luminance levels during television viewing, 80% of viewing occurs between 0-100 lux (see Figure 1 below). Based on this data, we believe that the data points should be at or below 100 lux. The Draft DOE NOPR proposes measurements at 10, 50, 150, and 300. We recommend that EPA and DOE revise its data points to include 1, 10, 50, and 100 lux. An August 2011 joint CLASP and Australian Digital Testing study<sup>1</sup> suggests that there is little difference in power consumption between 100 and 300 lux. Therefore, we suggest that DOE remove this point from their test method. In the absence of further data, we suggest that DOE/EPA weight these values equally. However, DOE should consider weighting these values as part of future study. We do not support the use of a 0 lux data point because it is highly unlikely that a 0 lux environment occurs under actual viewing conditions.

We advise EPA/DOE to provide specific guidance on measuring ambient light levels, such as the location and orientation of light metering device to will ensure that the test method is carried out in a replicable, consistent manner.

Figure 1: TV Viewing Times by Illuminance Intervals (CLASP 2011). Note that the vast majority of viewing occurs between 0-100 lux (boxed in red).



**3) We support EPA’s continued efforts to characterize the impacts of Internet connectivity on television energy consumption.**

<sup>2</sup>[http://www1.eere.energy.gov/buildings/appliance\\_standards/pdfs/analysis\\_of\\_background\\_illuminance\\_levels\\_during\\_television\\_viewing.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/analysis_of_background_illuminance_levels_during_television_viewing.pdf)

An increasing number of TVs are internet-ready or have the capability to access the Internet, such as Google TV, which could significantly increase power in Standby Mode. One industry report states that by 2014, internet-enabled televisions will account for 54 percent of the total global television market. In 2010, shipments of these televisions rose 125% globally from the previous year.<sup>3</sup> During the EPA webinar, NRDC mentioned that the initial Google TV had a Standby Power value of 5 Watts (roughly 34 kWh/yr). The potential power increase due to network connectivity is not well understood, but could be significant. To ensure that energy savings are achieved for this growing share of the television market, we recommend DOE incorporate Internet connectivity and power usage associated with this feature in a test procedure. We would also support an ENERGY STAR test and list requirement to measure and report power in Standby Mode while connected to the Internet.

#### **4) We support EPA's continued efforts to characterize the impacts of 3D content on television energy consumption.**

An increasing number of televisions have 3-D viewing capabilities, and we support EPA's commitment to addressing 3D television in a future specification revision. A recent industry market study reports that 21 million 3-D televisions were sold worldwide in 2011, or roughly 10% of total sales. This report notes that global 3-D TV sales are expected to grow 138% in 2012, rising to 50 million units or 20% of the TV market.<sup>4</sup> A similar market report<sup>5</sup> states that the global average selling price for 3-D TVs in 2015 will drop by more than half the price in 2010. It is uncertain how these additional features will impact future TV energy consumption, and we support EPA's efforts with stakeholders to develop a 3D test clip and associated test procedure to better characterize its impacts on energy consumption.

#### **5) We recommend EPA conduct an additional study to characterize user behavior related to picture mode settings.**

The current TV test procedure focuses on Default Home Mode. However, there are a number of additional viewing modes (such as "Sports" or "Vivid"), which can increase

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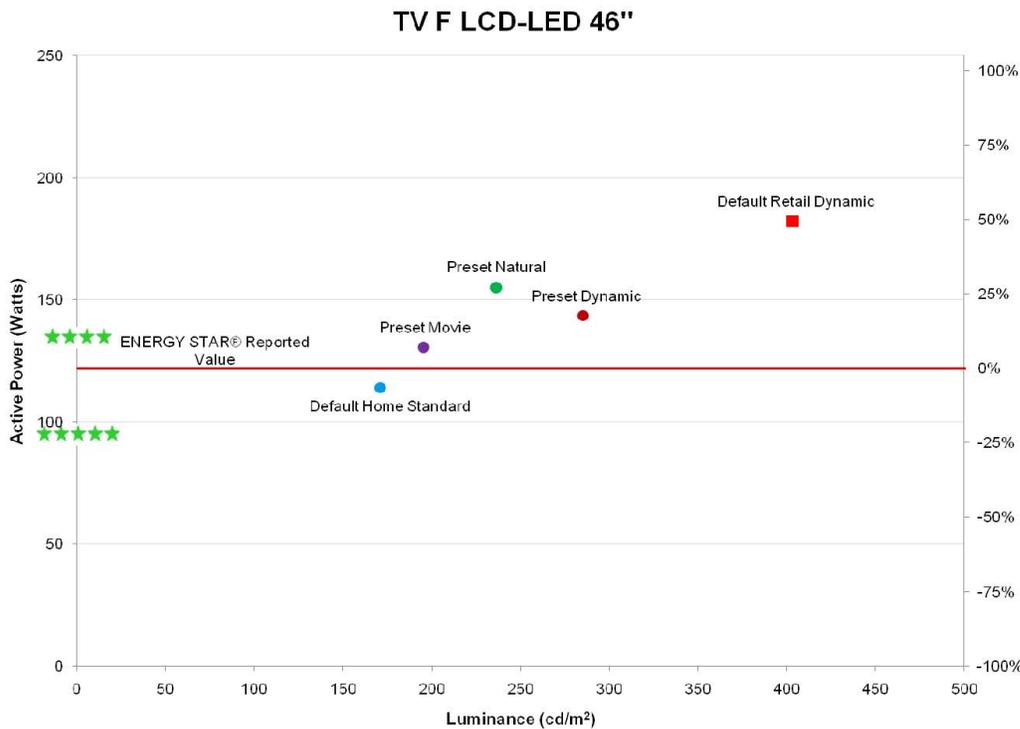
<sup>3</sup> *Internet-Enabled TV Trumps 3-D TV in 2010*. Riddhi Patel. iSuppli Press Release. August 5, 2010.

<sup>4</sup> Display Search 2012. "Shipments of 3D LCD TV Panels Reach 21M in 2011, Reaching 10% Penetration" [http://www.displaysearch.com/cps/rde/xchg/displaysearch/hs.xsl/120307\\_shipments\\_of\\_3d\\_lcd\\_tv\\_panels\\_reach\\_21m\\_in\\_2011.asp](http://www.displaysearch.com/cps/rde/xchg/displaysearch/hs.xsl/120307_shipments_of_3d_lcd_tv_panels_reach_21m_in_2011.asp)

<sup>5</sup> *Global 3-D TV Shipments Set to Soar to 78 Million Units in 2015*. Riddhi Patel. iSuppli Press Release. March 1, 2010.

brightness and overall power consumption. It is uncertain if users leave their TVs in these new modes or if they switch back to Home Mode when they are finished watching specific content. As the figure below suggests, leaving the TV in these other viewing modes could inadvertently increase energy consumption and the consumer would not realize the savings they were expecting with purchase of an ENERGY STAR qualified television.

Figure 2: Active Mode Power by Viewing Mode for a 46" LCD LED TV (Ecos 2010)<sup>6</sup>



As EPA mentioned on the webinar call, a 3M study found that roughly half of users had changed the picture settings on their TVs at some point. We recommend EPA conduct further study to better characterize user behavior related to picture mode settings.

In the meantime, we recommend EPA require a double prompt that lets the user know they are leaving 'Energy Saving Mode', which is the Default Home mode under which the product qualified for ENERGY STAR.

**6) We recommend that EPA establish a clear relationship between ENERGY STAR Version 6 and the 'ENERGY STAR: Most Efficient' to accelerate market adoption of the most efficient products and maintain consistent consumer messaging.**

<sup>6</sup> Ecos 2010. Assessment of Options for Improving Energy Efficiency Test Procedures for Displays.

We applaud EPA for referencing the Most Efficient 2012 specification its Draft 2 Version 6 TV specification. However, we believe EPA should go further and establish a formal link between the two programs. Without a clear link, we are concerned that these two specifications may cause consumer confusion between its ENERGY STAR: ‘Most Efficient’ and ENERGY STAR initiatives. In our discussions with retailers, they have frequently stressed the importance of consistent consumer messaging, and we believe having two unrelated initiatives may cause confusion among consumers.

In the fast-paced televisions market, the two principal challenges for ENERGY STAR are maintaining acceptable levels of market penetration and providing manufacturers with adequate notice to integrate specifications into their product planning cycles. We believe that a multi-year link between ENERGY STAR and ENERGY STAR: Most Efficient strikes the right balance and achieves both of these two goals. Establishing a direct linkage between ENERGY STAR and ENERGY STAR ‘Most Efficient’ creates a stronger, more coordinated multi-year strategy to accelerate market penetration of the highly efficient models. We suggest that EPA develop a relationship between ENERGY STAR and ‘ENERGY STAR: Most Efficient’, similar to the Tier 1 and Tier 2 specifications of the BCE program.

The BCE program uses a multi-tier approach to encourage market penetration of highly efficient models. ‘Tier 2’ models represent the top models available on the market, and typically encompass the top 3-5% of the market at the beginning of a program year. ‘Tier 1’ typically represents the top 20-25% of models. After one year, market penetration of Tier 2 has typically increased to 20-25%. It then becomes Tier 1 for the following year, and a new Tier 2 qualifying level is selected (see Figure 3 below). For example, ENERGY STAR 5 (ES 5) was the Tier 2 qualifying in 2010. In 2011, ES 5 became the Tier 1 qualifying level.

Figure 3: BCE Program Qualifying Level by Tier and Program Year

| <b>Program Year</b> | <b>Tier 1</b> | <b>Tier 2</b> |
|---------------------|---------------|---------------|
| 2010                | ES 4          | ES 5          |
| 2011                | ES 5          | ES 5+20%      |
| 2012                | ES 5+20%      | ES 5+35%      |

This multi-year program design provides added visibility and recognition for leading edge televisions, helping to accelerate market adoption of highly efficient technologies. In addition to the synergistic benefits for the EPA program noted above, this method would provide program partners with advance notice of future specification levels and consistent consumer messaging.

**7) We recommend that EPA further characterize the savings opportunity of integrating standalone devices, such as set top boxes, into televisions.**

Consolidating standalone devices such as set-top boxes into televisions may cause the TV to use more energy but, by eliminating a separate box, may decrease overall household energy consumption. The net effect of device consolidation is not well understood and so we recommend EPA conduct additional study to better characterize its energy saving potential. If further study demonstrates that device consolidation results in a net decrease in total energy consumption, we recommend that EPA consider incorporating an adder for device consolidation into future ENERGY STAR TV specifications.

Sincerely,



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