March 21, 2019 (Amended April 2, 2019)

To: James Kwon, U.S. EPA ENERGY STAR®
From: Erica Logan, ITI

Re: ENERGY STAR for Displays v8 Final Draft

On behalf of the sustainability innovation leaders in the information and communications technology (ICT) sector, ITI appreciates the opportunity to provide comments for ENERGY STAR Displays v8 Final Draft Specification; revised April 2, 2019.

We thank the EPA for addressing a number of the recommendations industry proposed following publication of Draft 2, including adjustments to the color gamut allowance, incentives for HDR technologies and updating the signage display definition to increase pixel density to 7000 pixels/sq-inch.

Remaining industry concerns include:

Product Categories

Industry remains concerned that the product categories do not adequately account for product features. In particular, 27" 4K panels, which fall into the 210-315 square inch category has a 5% lower power allocation as compared to Draft 2. This is significant, and while the pass rate for the overall range may be 30%, this is certainly not the case for 27" 4K screens, which fall into the upper most range of its category.

Adders

Enhanced performance display (EPD) – Current allowances are still too restrictive as they will eliminate more than 70% of products on the market from eligibility. Industry recommends increasing the EPD allowance by changing the multipler to 3.85 and the -0.52 to -1.2 in Equation 3. Unpublished individual company power consumption data is highly confidential, but industry could work with EPA to either aggregate data or share such data as confidential business information.

USB-C – current proposals do not account for differing power delivery (PD) capability. Industry recommends a USB-C PD adder of 5 kWh to account for power delivery (PD) feature in sleep and active mode.

Optical Characteristic of Curved Panel - Different curvature of TFT and Color Filter layers causes a larger misalignment between the layers due to mechanical stresses; resulting in crosstalk between the sub pixel colors. To prevent cross talk between sub pixels, the design of the TFT needs to be modified but at the expense of lower transmittance efficiency. Industry proposes EPA increase the

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adder from 15% to 30% to account for the drop in panel transmittance efficiency for curved displays.

Total Energy Consumption Requirement for Monitors (Equation 2)

Per section 3.3.3 (lines 306-308), "For all Monitors, Calculated TEC (ETEC) in kWh shall be less than or equal the calculation of Maximum TEC (ETEC_MAX) with the applicable allowances and adjustments (applied at most once) per Equation 2."

Industry seeks clarification as to what "applied at most once" means. The phrase only makes sense for HDRs.

Measurement Angle and Contrast Ratio

Per section 3.3.4 (i) (line 328), "*Contrast ratio of at least 60:1 measured at a horizontal viewing angle of at least 85° from the perpendicular on a flat screen and at least 83° from the perpendicular on a curved screen, with or without a screen cover glass*;"

Industry recommends a measurement angle of 45° instead of 85°. Measurement at an 85° angle off-axis is not at all representative of how a consumer uses a display. A 45° degree angle would create a viewing cone that is far more realistic, representing an approximate average of 30, 45 and 60. Additionally, measurement at 85° is prohibitively expensive. Even a massive half-ton $300K measurement device from Konica Minolta is limited to screens of 23". Measurement at a 45° angle can likely be done suitably with a $10K hand-held tool.

With respect to the contrast ratio, industry recommends a ratio *far greater* than 60:1. Industry would be pleased to work with the EPA to research an appropriate exact number.

We would appreciate an opportunity to discuss the aforementioned comments in greater detail.

Sincerely,

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