Version 6.0 ENERGY STAR Displays Product Specification
Summary of Stakeholder Comments in Response to the Displays Discussion Guide (December 2010) and Stakeholder Webinar (February 2011)

Issue No.	Topic	Comment	ENERGY STAR Response
1	Emerging Technology	Creation of a separate Energy Star display category for high performance displays employing IPS panels (similar to the European ErP Lot 3 display requirements that recognize the higher performance displays and allow greater power allowances to accommodate the higher backlight requirements)	In the interest of ensuring ENERGY STAR products deliver the features and functionalities consumers seek, EPA does provide additional power allowances for functionality that data confirm warrants such an allowance. EPA seeks data that demonstrate that functionality associated with these displays require additional power. In particular, EPA would like to understand better how the amount of light transmitted through a display panel is affected by the pixel size and its relative resolution.
2	Test Method	Discussion of how to test and rank displays that include enhanced features that can not be turned off by the user.	EPA requests stakeholder clarification regarding the typical enhanced features, which are not accessible for modification by the users, as well as their associated power consumption. In this draft specification EPA is proposing testing that accounts for certain features that cannot be turned off, per Section 5.2.C in the Test Method.
3	ENERGY STAR levels	The potential approach of establishing discrete on mode limits based on the top 25% performing displays in each size category (instead of trying to draw a linear limit across multiple display sizes based on resolution and area with an adder for higher resolution displays. The straight line calculation method for setting on mode limits favors smaller displays and handicaps larger displays in the current 5.0 spec.	EPA is currently assembling data using IEC 62087 and will propose performance levels once stakeholder test data is available. EPA will consider the proposed approach in determining efficiency levels in Draft 2 of the ENERGY STAR Display product specification revision.
4	Resolution and Screen Area Parameters	Some stakeholders commented that displays with reflected light have very low consumption levels and due to the nature of the displays, the level setting should not be based on this display technology. Stakeholders commented that currently it is not possible to remove resolution from the maximum On Mode power equation and demonstrated qualified units that would be affected by the exclusion of resolution.	Considering the discrepancies and ambiguity in the data, as it relates to resolution, EPA will continue to explore the effect of removing resolution from the maximum on mode power equation during this revision.
5	Interface	Consider what the equivalent of DPMS is for non-VESA interface types, to ensure that displays reliably go to sleep. A first step is a list of interfaces present on products that currently qualify.	Within the revised Draft Test Method, EPA has identified the most prevalent interfaces, as depicted in the current qualified product list, and welcomes stakeholder feedback pertaining to the equivalent of DPMS for these interface types.

6	Power Management/Options	Some displays with occupancy sensors. I think worth asking the question if they should get a credit. I'm not sure that should be done, but raising the question could be helpful.	EPA seeks stakeholder feedback on the predominance of occupancy sensors within currently available displays and their associated power savings capabilities.
7	Test Method	The current test method does not specify the location and distance from which to measure the light entering the light sensor. Lux is proportional to distance, and the placement of the light sensor should be defined in the test method. In addition, the direction of the light sensor should b articulated, for a measurement taken horizontally is not simulating a 'real world' scenario. One suggestion is to use the same parameters of the OSHA regulation for luminance and measure the lux of the overhead light in a perpendicular manner.	In the revised Draft Test Method, EPA has clarified details pertaining to the test set up and is asking stakeholders for feedback on the proposed approached.
8	ABC	Stakeholders commented that although ABC is a pretty good feature for displays to have, it is difficult to reliably either predict or measure its performance. Generally, stakeholders believe that engagement levels may vary at different wavelengths of light and specific testing parameters must be looked at to determine the effect of ABC. In addition, the variation with the ABC feature might result from the testing method, e.g., the lighting conditions used, and not the ABC technology. Stakeholders also commented that it is necessary to develop test procedures that will ensure that accurate and repeatable results are achieved at different laboratories.	EPA is proposing adopting the DOE Television testing conditions for ABC enabled by default. EPA will revise its display test method to reference the final DOE test procedure. EPA is referencing the DOE recommendations for testing televisions to harmonize with the V 6.0 draft specification for Televisions. In addition, EPA has clarified the procedure for testing displays with ABC enabled by default and is requesting stakeholder feedback regarding all modifications, including those that pertain to testing displays with ABC enabled by default.
9	Test Method	Different light sources from differences in circuitry and wavelength, create different power consumption. Although the effect is marginal, specifying the light source is necessary for standardization purposes. In addition, the test method should include timing for the stabilization o ambient light conditions. For example, most offices use fluorescent lighting, and as the fluorescent tubes heat up, the effect on power consumption shifts.	EPA requests stakeholder feedback on the effect different light sources have on power consumption when IEC 62087 is used.
10	Test Method	ENERGY STAR should focus on digital, and not analog, interfaces. Digital interfaces are preferable, as HDMI and Display Port are very prominent and VGA is slowly being eliminated.	In the Draft Test Method, EPA is proposing for digital interfaces to take a precedence over analog ones.
11	Test Method	Not all monitors have the capability (buttons) to change the brightness on the monitor. Default luminance must be measured from the signal generator, not from a PC. Using the PC to generate the image is false.	EPA is aware of only one display currently available in the market that is enclosed and has no user accessibility. EPA welcomes stakeholder feedback on the commonality of these devices.
12	Test Method	In regards to section 5.C.2 of the test method: "*The LMD shall measure a rectangular area that is the greater of (1) an area each side of which is 10% as long as the corresponding side of the viewable screen area, or (2) 500 pixels.* Most agencies would not have this type or rectangular area meters." 1. Measurements are taken in Cd/m2. As such, the value for measuring a small area or a large area is the same. 2. 500 pixels is referenced in case some of the pixels are burned out. Generally speaking 500 pixels would be used for measuring digital picture frames.	EPA has clarified this requirement in the current draft Test Method.
13	Test Method	Several stakeholders made comments regarding inconsistencies within the test method. For instance, within the current test method, it is unclear what the stabilization time is for recording On Mode power measurements for displays less than 30". In addition, stakeholders suggested that a procedure for measuring off mode power should be clarified. Finally stakeholders requested clarity for measuring average power as opposed to instantaneous power.	EPA has made significant changes to the ENERGY STAR Display products Test Method and believes that many of the testing issues associated with the VESA standard are no longer applicable. EPA welcomes stakeholder feedback on how to clarify or improve the new modified Test Method prior to June 14, 2011, in order to provide more guidance to companies who are interested in testing products and submitting additional data to EPA by July 18, 2011.
14	Testing Standard	A suggestion would be to transfer requirements right into the standard instead of referencing the standard that might be outdated.	For all specifications, EPA cites specific editions of reference standards in the test method.
15	Touch Screen	Some stakeholders feels that touch screen technology will be more prevalent in the future. Considering that there is an additional power consumed from touch screen, EPA should consider the power associated with touch screen.	EPA is not aware of many display products that exist with touch screen technology and welcomes stakeholder feedback on the market prevalence and power consumption of this feature.
16	Connectivity	In regards to connectivity, some small displays are already USB powered.	EPA welcomes test data on the power consumption associated with USB powered display products.

17	Default Luminance Requirements	For the most part, stakeholders are supportive of EPA's harmonization efforts, as it pertains to test luminance. However, some stakeholder commented that EPA should not adopt a default tes luminance for the following reasons: 1. It will not specify power measurements with the display product in its default, 'as-shipped', settings. 2. It does not harmonize other international standards, which specify luminance values a percentage of maximum luminance. 3. It will not provide EPA with systematic power consumption results. The relationship between luminance and power varies in an often non-linear fashion, and is highly variable between the different display technologies. This non-linearity and unpredictable relationship between luminance and power is becoming even more pronounced as newer technologies employ sophisticated “local dimming” and “power on demand” approaches, which change the power and luminance significantly as a function of the instantaneous image being displayed. 4. It will encourage manufacturers to ship their displays at a maximum luminance, due to the lack of incentive for a manufacturer to employ a 'forced menu'.	In Draft 1 of the ENERGY STAR specification for Displays, EPA is proposing for partners to test and ship products at a luminance value greater than or equal to 65% of the maximum luminance to qualify ENERGY STAR products. EPA proposes that for purposes of qualification partners report both the “as shipped” and maximum luminance values that reflect a ratio of at least 65% to EPA. Moreover, EPA is interested in understanding the typical 'standard' and 'home' modes used for all display products.
18	Luminance Testing	Stakeholders stated that if the setting of a default test luminance is intended to be equitable to all technologies, then the selection of a “technology neutral” test pattern is critical. Unfortunately due to the extreme differences in the way each technology creates the luminance for each image, such a “technology neutral” pattern has been elusive.	EPA agrees that a test pattern that is technology neutral is critical and believes that IEC 62087 achieved this. In the Draft ENERGY STAR Test Method for Displays, EPA is proposing to test On Mode power using both the dynamic broadcast content video signal and the internet content video signals, as specified in IEC 62087, for all product sizes.
19	Harmonization	Although some stakeholders welcome the idea of harmonizing ENERGY STAR Displays and TVs test methods, mainly due to the convergence between the two products, some stakeholders felt that despite some similarities, there remain significant differences between displays and televisions such as the high pixel resolution typically required by computer monitors to display detailed spreadsheets, graphics, etc. In addition, there are also generally differences in color temperature and brightness as well as input signal choices and features.	It is EPA's intent to align the ENERGY STAR TV and Displays test methods to the extent that is possible. Moreover, EPA understands that power consumption levels for Televisions and Displays vary due to the differences in usage, i.e., a signage display that is in a airport setting might require a higher brightness than a Television of the same size that is in a home environment. Currently, EPA has addressed the minor differences between the two products within their respective test method, and is asking stakeholders to please provide feedback pertaining to the major differences between Televisions and Displays and their associated power consumption.
20	Power Management/Options	We suggest considering a requirement that displays should support a dim display feature where the display brightness level will be reduced to e.g. 5 or 10 % after a short period e.g. 2 minutes, which is controlled by the power option settings. A supporting requirement for the computers' default dim display setting should be included in the computer revision supplementary to the blanking requirement.	EPA seeks stakeholder feedback regarding the predominance of these type of dimming features and will continue to explore instituting this requirement.
21	Product Family	For clarity to our customers, we would like more examples of "acceptable variations within a product family" in the definition (e.g. alternate EPS, output connectors, etc.).	EPA understands that there may be many variations of displays within a family that leads to difficulty in defining which displays belong under a particular product family. EPA has specified that for qualification purposes, the highest energy using configuration within the family shall be considered the Representative Model.