Document	Commenter	Date Submitted	Topic	Comment	Status	Response
Draft #1 Version 5.0	Mark Hollenbeck (HP)	8/22/2008	Effective Date	HP objects to the proposed effective date since the draft is almost 7 months late. The implementation dates needs to be delayed 7 months as well. We can not implement design changes needed to comply with the new Display specifications by October 2008. That is simply not enough lead-time to make the necessary design changes. If the lead time is not extended, we anticipate that very few if any displays will be available on the market that meet the ENERGY STAR specifications. Certainly significantly less that 25% of the products in the market now or on the market in October 2009.	Resolved.	EPA allows manufacturers nine months of lead time (from when the specification is finalized in January 2009 to the October 2009 effective date) to make modifications to product packaging and marketing materials for products which will no longer meet the Version 4.1 requirements. It is EPA's belief this is enough time for manufacturers to prepare for the implementation of the new requirements. EPA will set the specification so that when final, at least 25% of the models currently available on the market will meet the ENERGY STAR criteria.
Draft #1 Version 5.0	Mark Hollenbeck (HP)	8/22/2008	Screen Resolution	We protest the power level based on screen pixel format (resolution). This is cumbersome and the majority of the panels have the same format anyway.	Resolved.	Under the current monitor specification V4.1, resolution is the key criteria in determining power consumption levels. In the Draft 1 of the display specification, we determined that display power consumption is a functio of both resolution and screen area. It does have design/engineering implications, since the company has to take into account both area and screen resolution when calculating what the max energy consumption of a model may be in order to qualify for ENERGY STAR, and this may render design more challenging. However, the alternative is to neglect resolution, which has a clearly greater effect than area on power consumption the smaller the display. Additionally, there is a wide array of resolution in use, which argues against the point that "the majority of the panels have the same format."
Draft #1 Version 5.0	Mark Hollenbeck (HP)	8/22/2008	Section 4.A -Test Conditions	HP does not want to submit power data in low and average room ambience settings. This is too difficult to control in the factory. We want only average lighting conditions.	Resolved.	EPA has incorporated the Automatic Brightness Control testing procedure from the TV specification.
Draft #1 Version 5.0	Brian McLane (HP)	8/26/2008	Screen Resolution	Just because the current 4.1 spec has a criteria does not mean it should not be challenged for the new 5.0 criteria. Actually, we do not see a need for the screen resolution as criteria since the majority of panels for any particular size share the same resolution. So, we would prefer a simpler formula just based on panel size.	Resolved.	Under the current monitor specification V4.1, resolution is the key criteria in determining power consumption levels. In the Draft 1 of the display specification, we determined that display power consumption is a functio of both resolution and screen area. This methodology allows EPA to compare power consumption of models with the same resolution but different screen areas as well as models with the same screen areas and different resolutions. EPA's analysis of the data suggests that resolution is the better predictor of On Mode power for units tested at default luminance settings, though incorporating screen area provides a marginal improvement. The finding further suggests incorporating screen area provides more significant importance and flexibility in the context of designing an approach to encompass frames and signage, which have different On Mode power, megapixel, and screen area relationships. This approach also furthers EPA's goal of minimizing the binning of products and designing a parallel ENERGY STAR track for all displays including televisions.
Draft #1 Version 5.0	Alvin Carter (Lenovo)	8/27/2008	Section 3.A - On Mode Requirements	Lenovo supports the proposed formula for calculating the on-state power consumption limit in the EPA 5.0 Tier 1 draft: a. Lenovo believes the use of screen size & resolution is more representative of the products available today and in the future. b. Lenovo has demonstrated with products released this year that the new requirement can be achieved by using commercially available technology.	Resolved.	EPA appreciates the comments and we agree display power consumption is a function of both resolution and screen area.
Draft #1 Version 5.0	Alvin Carter (Lenovo)	8/27/2008	Section 4.A - Test Conditions	Lenovo has a concern that Draft 1 5.0 test condition does not define a consistent test condition. Lenovo believes a defined test condition, as in version 4.1, provides a more valid method for end users to interpret power consumption. Lenovo has evaluated various monitors and found that by significantly reducing the brightness to levels most users would find too dim for use, nonetheless the design would pass the current requirement in 5.0 Tier 1.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.

Draft #1 Version 5.0	Alvin Carter (Lenovo)	8/27/2008	Section 4.A - Test Conditions	Lenovo believes the existing 175 cd/m2 measurement point should be retained in Energy Star 5.0 Specifically, Lenovo suggest changing the corresponding words of “default setting” on page 12 and 13 of the version 5.0 draft to “175cd/m2”. Below is the summary of the suggested changes to the draft: a. Page 12, at the Section of Luminance Test Patterns and Procedures, change "the unit's default setting" to "175cd/m2"; b. Page 13, at the Section I, Display Set-up and Characterization, change "the unit's defau setting" to "175cd/m2"; c. Page 13, at Section J, Test Method, On Mode 3, change "the unit's default setting" to "175cd/m2"	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Alvin Carter (Lenovo)	8/27/2008	Sleep & Off Modes	Lenovo also suggests that the EPA tighten the sleep/off power requirement to be≤1watt and ≤0.5watt respectively and to create a different levels for different power achievement (e.g. level 1: sleep≤1w, off≤0.5w. Level 2: sleep≤2w, off≤1w). a. The above suggested level 1(sleep≤1w, off≤0.5w) power requirement is achievable today. Lenovo has demonstrated that this requirement can be achieved with the multiple products released this year. b. China has released a similar energy standard this year and the above level1 requirement is included. Lenovo has also achieved this requirement with multiple products released this year.	Resolved.	The Sleep and Off mode requirements in Draft 1 of the Display specification are identical to the current requirements of the V4.1 monitor specification. The proposed change to reduce the Sleep mode to≤1 watt is for Tier 2, and would allow for consistency with other ENERGY STAR specifications, such as TVs.
Draft #1 Version 5.0	Birgit Kämpfle (Fujitsu Siemens Computers)	8/27/2008	Section 4.G - Luminance Test Patterns & Procedures	For all Fixed Pixel displays (e.g., LCDs and others), test pattern (VESA FPDM Standard 2.0, A112-2F, SET01K) shall be displayed that providesten shades of gray from full black (0 volts) to full white (0.7 volts). Input signal levels shall conform to VESA Video Signal Standard (VSIS), Version 1.0, Rev. 2.0, December 2002. With the brightness and contrast is set to factory default setting (as-shipped setting) on monitor, the technician shall check that, at a minimum, the white and near white gray levels can be distinguished. If white and near white levels cannot be distinguished, then contrastor suitable other option shall be adjusted until they can be distinguished.The luminance value shall not be below 170 cd/m2 The technician shall next display a test pattern (VESA FPDM Standard 2.0, A112-2H, L80) that provides a full white (0.7 volts) box that occupies 80% of the image.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Data Set	In reviewing the charts provided with the draft specification, it is noted that there are a few extraneous data points. Closer review reveals area calculation errors for devices 66, 67, 70, 71, 72, 73, 111, and 112. It is also necessary to reconcile conflicts between some aspect ratios and resolutions in the data set.	In process.	EPA is aware of model specific anomalies with regards to screen area and has followed-up with Partners where appropriate. If this issue is not resolved, these models will be removed from the dataset for preparation of the final draft specification.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Screen Resolution	We support the inclusion of area and resolution as variables in the power calculation. This should give the Version 5.0 requirements flexibility to account for the variety of displays coming into the marketplace. This is an important feature given the range of sizes the standard attempts to address.	Resolved.	EPA appreciates the comments and we agree display power consumption is a function of both resolution and screen area.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 3 Table 1	We recommend setting the category boundaries at 24 inches rather than 30 inches. For example, a category boundary of greater than or equal to 24 inch diagonal is recommended for the third category. This would define the boundary based on LCD backlight construction. 24 inch and larger displays are direct lit, while less than 24 inch displays are edge lit. This would improve the data fit for the mainstream monitor sizes and drive efficiency improvements for the highest power computer monitors. With this consideration, there is a natural commonality between TV technology and the monitor sizes greater than or equal to 24 inches.	In process.	EPA appreciates the comment. 30 inches was selected as it best fit the submitted data. EPA will investigate whether this change makes any significant difference to the qualification rate or power comsumption level.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 3 Table 1	The Table 1 equations are not meaningful if they were calculated with the default luminance values from the data set. This is because the default luminance is not defined. These equations for “Maximum On-Mode Power Consumption” should be recalculated based on the ENERGY STAR 4.1 powers (measured at 175 cd/m^2 minimum axial luminance) reported in the data set. The ENERGY STAR 4.1 power consumption numbers better reflect the efficiency of monitors after they are adjusted to a typical use level.	Resolved.	Table 1 equations are now based on fixed luminance settings dependent on screen area.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 4.F - Power Measurement Protocols	In order to facilitate the convergence of larger displays and televisions, it is requested that the guideline for the approved power meter be adopted from Version 3.0 ENERGY STAR TV specification.	Resolved.	EPA agrees with this comment and will incorporate in Draft 2 the language from the the TV specification.

Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 4.F - Power Measurement Protocols	A minimum warm-up time is specified, but there is not a burn-in period specified for the device. This leads to uncertainty and difficulty when confirming ENERGY STAR compliance. Displays lose significant luminance in the first 50 - 100 hours of operation. In essence, the factory default luminance changes over the life of the display. This uncertainty is a consequence of not specifying a minimum display luminance test parameter. Therefore, a 175 cd/m^2 minimum luminance setting is recommended for on mode power consumption measurements.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 4.G - Luminance Test Patterns & Procedures	The default luminance level at which the on mode power consumption is measured must be defined. We recommend keeping the 175 cd/m^2 minimum luminance setting from the 4.1 standard as the default luminance level for on mode power measurement. The ENERGY STAR requirement should provide a luminance value as an industry standard default luminance to define the specification fully and to maintain the rigor of the test method. If left unspecified, the default luminance value may result in confusion about the regulation in the market.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 4.G - Luminance Test Patterns & Procedures	The luminance setting for on mode power measurement should typical monitor usage. To achieve this, we recommend a default luminance of 175 cd/m^2 for monitors with diagonal dimensions less than 24 inches. This brightness value is typical of standard consumer and corporate monitor usage. Above 24 inches, display usage varies more by application and should satisfy the needs of expert users, graphics display, longer viewing distances, and information signage. A higher typical luminance requirement may be needed at 24 inches and above. Therefore we recommend including 24 inch diagonal displays in the large display category. Setting the minimum luminance for on mode power consumption at 175 cd/m^2 will set a reasonable, attainable, and meaningful target for the high volume segment of the market. More details, as well as other comments, are offered in the section comments below.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level. From the data we have received from stakeholders, 175 cd/m2 is typical of 15" and 16" monitors, but not for larger screen area displays. For a 17"monitor, it is typically 200, while for those larger than 19", it is close to 300.
Draft #1 Version 5.0	Shannon Siefken and Kevin Hoffman (3M)	8/27/2008	Section 4.G - Luminance Test Patterns & Procedures	Since no luminance value is fixed for the on mode power measurement, the ENERGY STAR Requirements do not provide goals for display efficiency. Use of “default settings” removes efficiency criteria from the standard and encourages compliance simply by changing default settings. This does not reward the best-in-class devices. There is concern that the language in the boxed note will not be strictly interpreted leading to displays set to lower luminance values. If the default luminance is too low the display is not usable. This would lead the users to setting higher brightness levels thereby negating the intent of the requirements. We recommend that a minimum factory default luminance should be specified, or that the 175 cd/m^2 measurement condition from ENERGY STAR 4.1 should be kept in Section G. This would assure fitness for use similar to TCO Development requirements.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	As-shipped Luminance Seetings	Concerning as-shipped luminance settings, In principle, JEITA agrees with the EPA’s proposal (testing displays at the unit’s as-shipped luminance settings). Nevertheless, we would like the EPA to consider the following two concerns: 1. Under the EPA proposal, manufacturers can deliberately make the as-shipped luminance settings of their units lower to meet the ENERGY STAR requirements. Furthermore, even without such “evil deliberate”, no unified luminance setting value for manufacturers might happen confusion. 2. If the as-shipped luminance levels are set deliberately lower only for meeting the ENERGY STAR requirements, this could cause the result not suitable for the intent of the standardization.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	Effective Date	Page 14 — 6) Effective date Can we make the application of the Version 5.0 specification soon after the final version is issued (Jan. 21, 2009)?	Resolved.	EPA appreciates the comment to early qualify products to the revised specification. EPA will need to make some changes to the OPS system for the V5.0 data needs, and once completed, manufacturers are encouraged to qualify their products to the new specification level. We project this occuring in July 2009 at the earliest.
Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	Effective Date	Note on Page 15 — Transition time prior to the revised specification taking effect (nine months) We would like the transition time set to one year. Otherwise, we would like the effective date to be Friday Jan. 1, 2010. In general, setting effective dates to the first day of a month is easier for manufacturers to control the production than other dates.	Resolved.	EPA appreciates the comments but it is standard policy to allow manufacturers nine months of lead time from when the specification is finalized to the effective date.

Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	Screen Size	Note on Page 5 — Maximum viewable diagonal screen sizes for eligible products The Draft sets the maximum viewable diagonal screen size at 84 inches. We believe, however, that no maximum screen size should be specified because the screen sizes of professional signage are increasing every year.	Resolved.	EPA did not receive any data to suggest that products above the 84 inch diagonal would qualify under the proposed specification power consumption levels. EPA would be interested in receiving data to support the inclusion or exclusion of an upper limit.
Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	Tier 2: Added Functionality	Note on Page 8 — Display models with added functionality: Fair comparisons between products are not possible when measuring full-featured products considered in the Tier 2 requirements. Therefore, measurements should continue to follow the Tier 1 requirements.	In process.	It is EPA's intention to provide a level playing field for comparing similar products and to reward those models that perform efficiently and have enhanced energy saving functionalities. ENERGY STAR will work with stakeholders in a transparent manner to develop a methodology to measure these products.
Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	Tier 2: On Mode Requirements & Effective Date	Note on Page 8 - Tier 2 On Mode requirements: Will the maximum Tier 2 On Mode power consumption levels be defined in Draft 2 (planned for distribution on Oct. 22)? If not, when will they be defined?	In process.	EPA has not defined On Mode power consumption levels in Draft 2, but intends to determine them with stakeholder involvement during the Tier 2 development process.
Draft #1 Version 5.0	Shinichi Sano & Masahiro Shimura (JEITA)	8/27/2008	Tuners	Note on Page 5 — Products with a tuner : Products with a tuner In Japan, products cannot apply for Energy Star as TVs. Therefore, from Tier 2 on, products with tuners would not be able to apply in Japan. Consequently, we would like the Draft changed so that products with tuners can continue to apply as display monitors as before even after Tier 2 is introduced.	Resolved.	Currently, ENERGY STAR's agreement with Japan only covers office equipment and not consumer electronics. If interested, EPA would welcome expanding the agreement to cover other product categories. In preparation for the Display specification development, EPA conducted an analysis of power consumption requirements of TVs and monitors and determined that since these product categories are similar/interchangeable in many aspects, they should eventually converge into one display specification. EPA is making changes to the existing computer monitor specification, and will eventually modify the TV specification, to ensure that all possible products are consistently and fairly covered.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Data Set	As with other proposed ENERGY STAR specifications, ITI found it difficult to determine how or why EPA and the EU arrived at the proposed levels, especially given that some of the proposed limits would in effect violate the “25 percent rule” relative to the number of qualifying models. In general, it appears that the larger the display size, the less likely a product will qualify. Of particular note is the impact on so-called “professional signage,” where only about 13 percent of current models can meet the proposed limits.	Resolved.	Based on the data supplied to EPA, EPA based the power consumption requirements to cover approximately the top 25% most efficient products for all displays. Within the data set, EPA disaggregated the different screen sizes to ensure the most prevalent size models were adequately represented in the qualified data set.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Effective Date	ITI was surprised that EPA and the EU did not postpone the October 2009 effective date, given the inordinate delay in publishing Draft 1. It will be very difficult and costly for manufacturers to make the necessary design changes comply with the new Display specification, once it is finalized. If the lead time is not extended, we anticipate that very few ENERGY STAR-qualified models will be available on the market.	Resolved.	As with all specification revisions, EPA allows manufacturers nine months of lead time from when the specification is finalized to the effective date. Initially, the Display specification was to have been finalized in October 2008 and made effective in July 2009. Due to competing priorities, EPA needed to slow the Display specification development process. EPA anticipates that V5.0 will be final in January 2009 and go into effect nine months later, in October 2009.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Labeling	In line with the comment above, the draft Display Commitment statement relatively to labeling does not include text that is included in other product specifications that provides manufacturers with some flexibility in how the meet this requirement. For example, the Computer 4.0 specification includes the following: 1) EPA will consider alternative proposals regarding approach, duration, or size for electronic labeling on a case-by-case basis. 2) That specification, as well as the Imaging 4.0 specification, includes a variation of the following: 3) On product packaging/boxes for products sold at retail. 4) We believe that such flexibility should also be included for Displays, particularly given the diversity of products covered by the proposed specification.	Resolved.	EPA appreciates the comments and will incorporate the language from the TV specification into the Draft 2 of the Display specification. EPA looks forward to stakeholders comments on this language inclusion.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Meeting Preparation	In order for ITI to prepare our presentation and possible counterproposals for the September meeting, we request that EPA and the EU provide in advance a detailed explanation of the processes utilized to develop the specifications in Draft 1.	Resolved.	ENERGY STAR is an open specification development process and all documentation on how we set specification criteria is available on the ENERGY STAR product development Web site.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Partner Commitments	There are some important, substantive differences between the draft text of the Displays Commitment statement and similar provisions in other office product “Program Requirements.” This could present particular challenges for manufacturers that offer multiple product lines and, therefore, sign multiple Commitments. We suggest that EPA develop a consistent “Partner Commitment” statement that applies to all qualified products offered by a manufacturer.	Resolved.	EPA will review other current and draft specifications and ensure there is consistency between Draft 2 and relevant specifications.

Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Screen Resolution	We also wish to express opposition to basing computer display power levels on a screen pixel format. This would be very burdensome to test, and probably is not a very good differentiator, given that the majority of such displays use essentially the same format.	Resolved.	EPA appreciates the comments but the data received to date do not reflect this. The data we received from manufacturers (overwhelmingly LCD manufacturers) show that resolution is a greater factor than screen area On Mode power consumption for small displays. EPA's analysis of the data suggests that resolution is the better predictor of On Mode power for units tested at default luminance settings although incorporating screen area provides a marginal improvement. The finding further suggests that incorporating screen area provides more significant importance and flexibility in the context of designing an approach to encompass frames and signage, which have different On Mode power, megapixel, and screen area relationships
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Section 3.A - On Mode Requirements	Regarding On Mode Requirements, we have concerns that, if adopted as proposed, the revised Display specification could well prevent certain high performance displays from qualifying for the ENERGY STAR program. These displays utilize Super In-Plane Switching and similar technologies that are favored by professionals for such uses as CAD, design/graphics and media because of their high performance visual ergonomics. Many federal government users also require this type of display technology. However, such displays tend to have significantly higher power consumption profiles due to their use of densely interdigitated electrodes. Accordingly, ITI will be developing and offering an alternative recommendation for including such products under ENERGY STAR.	Resolved.	EPA has not received data from stakeholders to suggest the need to create a specific "high performance display" category. When developing a specification, EPA takes a technology neutral approach. As with other specifications, we do not create separate power requirements for similar products that may employ different display technologies (i.e., TVs with CRTs, LCDs, and plasmas). EPA is interested in receiving data concerning color consistency over viewing angle as a factor in power consumption along with screen area and resolution.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Section 4.A - Test Conditions	ITI opposes requiring manufacturers to test and submit power data in low and average room ambience settings. It is very difficult to control in a factory setting, which among other things could result in variations in test data, etc. We recommend that testing be limited solely to average lighting conditions.	Resolved.	EPA has incorporated the Automatic Brightness Control testing procedure from the TV specification.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Section 4.A - Test Conditions	ITI recommend removing the requirement to test units under a default as-shipped luminance setting. Testing displays at a single set luminance level will ensure a fair comparison across all manufacturers. Displays are often sold in the retail space at high luminance settings to attract customers to the product. By requiring testing to be conducted at default as-shipped luminance, manufacturers will ship with a lower luminance to comply with Energy Star limits. This will often result in customer dissatisfaction due to differences in out-of-box versus retail experience. This in turn will lead to an increase in complaints and returns, which will result in an increase in cost to the manufacturer. Even worse, it will result in damaged brand reputation and customer loyalty.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Section 4.A - Test Conditions	ITI recommends modifying the current test conditions for Japan to test at a single frequency of 100V/50Hz. Including the 100V/60Hz test condition unnecessarily increases the test workload. Frequency does not significantly affect power consumption, so testing at 100V/50Hz would be adequate to represent test results at 100V/60Hz.	Resolved.	The specification allows for testing at 100V/50Hz or 100V/60Hz for displays that are to be sold in Japan. It does not require testing at both frequencies.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Section 4.A - Test Conditions	Regarding On Mode Step 10 (Item J), ITI recommends changing the test procedure to integrate readings from the power meter over a 5 min period of time after the initial 20 min warm-up. The current proposal would result in an inconsistent testing method. Integrating the readings as we propose will ensure that all displays are tested over the same amount of time in a repeatable manner.	Resolved.	EPA appreciates this comment but feels the current requirement to measure wattage once wattage values are stable (meaning they do not vary more than 1% over a three-minute period) satisfactorily ensures repeatability by allowing comparison of stable wattage values, as opposed to averaged unstable wattage values, across different displays or the same display tested at different times.
Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Section 4.G - Luminance Test Patterns & Procedures	Display brightness is probably the most customer noticeable marketing feature. The decision on what brightness to set for shipping displays should be made by the manufacturer and not indirectly dictated by ENERGY STAR. By testing at a set luminance level, test conditions will be equal across the board without running the risk of shipping with artificially low luminance levels to meet ENERGY STAR levels.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.

Draft #1 Version 5.0	Ken Salaets (ITI)	8/28/2008	Sleep & Off Modes	Regarding “Sleep Mode Enabling” (Section 3.C.2), it is not clear how the requirement for activation of Sleep Mode within 15 minutes of user inactivity would apply to products such as digital picture frames or professional displays where, during normal use conditions, users would not be actively engaged with an input interface. Unlike computer monitors, these products are more similar to a television or stereo in that the user expects the product to remain active during viewing or listening without the need to re-activate the product every 15 minutes (or even every 30 or 60 minutes). While there is logic in applying this requirement to devices where interaction is part of the function, applying it digital picture frames and professional signage would result in a high level of customer dissatisfaction with the product, as well as with the manufacturer and ENERGY STAR brands. Moreover, many manufactures already provide a programmable timer feature or allow programming the display so that it is only active during certain hours of the day. Accordingly, we recommend excluding digital picture frames and professional signage from this requirement.	Resolved.	It is EPA's intention that, as in V4.1, all ENERGY STAR qualified displays must qualify under all three separate energy efficiency modes - On, Sleep, and Off. EPA is interested in receiving data from Digital Picture Frame (DPF) manufacturers concerning qualifying only products with energy saving functions, such as motion sensors or programmable timers, and how DPFs enter low power modes.
Draft #1 Version 5.0	Niclas Rydell (TCO Development North America)	8/29/2008	Section 3.A - On Mode Requirements	I’m skeptic to the way of calculating the power in on-mode for LCD displays. The principle of an LCD display is a number CCFL’s shining into a light guide (transparent plastic plate). The light comes out of the light guide and passes an LCD crystal and some passive filters. The bigger the screen size is the more CCFL’s is necessary to create a uniform and bright light behind the LCD crystal. The LCD crystal itself consumes very little energy to turn each pixel on or off. Thus, the power consumption should mainly be related to the amount of CCFL’s which means the screen size. The reason you find a correlation between the pixel density and the power consumption is that manufacturers normally use a standardized pixel density for each screen size: 4:3 format <17” = 800x600; <19” = 1024x768; <20” = 1280x1024; >20” = 1600x1200 For LCD this may give a false vision that the pixels are consuming the power but if you look in detail how and LCD is constructed you realize that it is not true. For other display technologies like plasma I agree that each pixel is consuming energy because the light is produced in the pixel itself.	Resolved.	This specification covers a variety of display technologies (CRT, LCD, plasma), and the data received from stakeholders support the inclusion of resolution and screen area in determining power consumption levels.
Draft #1 Version 5.0	Niclas Rydell (TCO Development North America)	8/29/2008	Section 3.A - On Mode Requirements	**Conclusion:** Your way of calculating with make it difficult for Large LCD displays with low resolution to pass the criteria and it will make it too simple for small LCD screens with high resolution to pass. When you talk about the area “A” it is not clear that it is defined in square inches until you read the example at the bottom of page 6. I think you should use the SI-units mm, cm, m instead of inch as the standard is used on a world wide basis.	Resolved.	EPA appreciates the comment, and has proposed revised equations in Draft 2 that lead to a 30% pass rate in On Mode for products greater than or equal to 30" in diagonal viewable screen size. EPA will investigate converting to SI units in future drafts.
Draft #1 Version 5.0	Niclas Rydell (TCO Development North America)	8/29/2008	Section 4.A - Test Conditions	If the test method shall be complete it should include an instruction on how to measure the “default as-shipped” luminance. This instruction should be introduced between number 4 and 5 in the method.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Niclas Rydell (TCO Development North America)	8/29/2008	Section 4.G - Luminance Test Patterns & Procedures	In the process of verifying and certifying products it is very important to have repeatability between test labs and technicians. It is very difficult to have repeatability if the technician shall check visually that the white and near gray level can be distinguished. The ability to distinguish different gray levels depends on many things such as visual quality, age, attitude towards the task etc… **Conclusion:** I suggest the different gray levels are measured by a luminance meter and the acceptable difference in candelas per square meter is defined.	TBD	EPA appreciates the comments and will investigate this further in Draft 3
Draft #1 Version 5.0	Marc Hoffman & Margie Lynch (CEE)	9/3/2008	Data Set	CEE appreciates the strengthened language in the partner agreement regarding data submission. Committee members have shared that it would also be helpful to have identifying information (manufacturer, model number) for the models in the data set supporting the specification development to the extent that it does not represent confidential information.	Resolved.	It is standard operating procedure for EPA to mask the public data during the specification development process. In order for EPA to obtain relevant and accurate data to set specification levels, we have agreed to honor manufacturers' requests to mask product specific information (model number, etc.) from the public data set.
Draft #1 Version 5.0	Marc Hoffman & Margie Lynch (CEE)	9/3/2008	Market Penetration of ENERGY STAR qualified Displays	CEE is pleased that EPA is revisiting this specification (formerly the PC monitors specification) to ensure that the ENERGY STAR mark continues to identify the top performing products in terms of energy efficiency. Though the current estimated market penetration of 90 percent for these products demonstrates the success of the program, it significantly reduces the differentiation provided by the mark for consumers and for our members. The overall qualification rate of 26 percent under the draft Version 5.0 specification is more in line with a product differentiation that is consistent with ENERGY STAR, though we encourage EPA to closely monitor advances in market adoption of ENERGY STAR-labeled display products. Rapid technological innovation in this category may quickly result in a market penetration rate significantly higher than today’s estimates.	Resolved.	The ENERGY STAR program is a voluntary initiative, not a standard, that identifies approximately the top 25% performing models in the market in terms of energy efficiency. EPA modifies the 25% target as necessary to ensure consumers have a choice among products and manufacturers.

Draft #1 Version 5.0	Marc Hoffman & Margie Lynch (CEE)	9/3/2008	Request Supplemental Information (energy savings opportunities, costs to consumers, savings & impact information)	Strong data on market penetration and energy savings of ENERGY STAR-labeled products are essential for our members' consideration of this specification proposal and future program planning activities. We would like to reiterate our comments from the discussion guide requesting detailed information regarding energy savings opportunities--both on a pe unit basis and in the aggregate--for the products that are covered under the specification. In those comments we also sought data on any additional costs consumers might bear for products that comply with the revised specification. We would ask that all of this information at a minimum— as well as demand savings and impact information—be included in the information presented at the stakeholders meeting on September 25 if not in Draft 2 of the specification.	Resolved.	EPA has provided this data in the analysis it performed pursuant to the Draft 2 specification on the Displays Specification Product Development Web page at www.energystar.gov.
Draft #1 Version 5.0	Marc Hoffman & Margie Lynch (CEE)	9/3/2008	Section 4.G - Luminance Test Patterns & Procedures	CEE supports EPA's intent with testing and luminance settings and sees the merit in having products tested and qualified with the same settings consumers receive when they purchase and use the units, and that those setting optimize display viewing for those consumers. We will be interested in hearing from manufacturer stakeholders whether EPA's requirement is likely to achieve the intended result.	Resolved.	Based on comments received on Draft 1 and at the September 25 stakeholder meeting, EPA will propose a set luminance testing level higher than 175 cd/m2 - closer to the average as-shipped luminance level.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Data Set	The pass rate for standard monitors was seen as too high. These monitors are very important due to the high sales volume and the pass rate should not be higher than 25 %.	Resolved.	The overall qualifying rate for all displays is 26%. The overall qualifying rate for computer monitors is approximately 28%, but the qualification rate by screen size does vary.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Digital Photo Frames	Regarding the inclusion of digital photo frames, the experts thought that they would be included under the US-EC agreement when the specification as a whole is under the agreement.	Resolved.	EPA appreciates the comment and agrees that based on the data received to date, treating digital picture frames as a type of electronic display makes sense.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Label and registration	It was asked if products should be registered at either US EPA or the EC before a manufacturer can claim that the product complies with Energy Star or is labelled with Energy Star because this is not stated clearly in the partner commitment section of the specification. The US EPA has confirmed after the meeting that only product registered can be marketed as Energy Star products. Reason for the question was that a MS had seen products declared as Energy Star compliant without being in the database.	Resolved.	The ENERGY STAR mark is trademarked; therefore, legally binding rules apply to its use. For one, it may not be used without permission, and permission is only granted for qualified products. Section 4.0 of "Using the ENERGY STAR Identity to Maintain and Build Value" reads, "Organizations must enter into an agreement with the government to use the marks..."
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Power Consumption vs. Screen Size	The experts did not understand the argument that the best correlation for power consumption was a combination of area and resolution because the R Squared value for power consumption vs screen area is 0.93, while EPA states that it is 0.70 for the combination of area and resolution. The 0.93 value is for "Screen Area (sq. inches)" vs "On Power at Default Luminance (W)" when filtering out incorrect or lacking data.	Resolved.	0.93 is only for professional displays (n=23). Area is a weak predictor of power consumption for small digital picture frames. Ultimately, EPA proposed three equations which weigh area and resolution differentially as screen area and resolution change.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Power Management for Digitial Photo Frames	Power management for digital photo frames was seen as important.	In process.	EPA is considering power management among other energy saving options to receive credit in Tier 2 of the Display specification.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Product Definition	The experts recommended to remove the requirement saying that the display screen and the electronics should be in a single housing.	TBD	This terminology is taken from the existing 4.1 specification definition. EPA would be interested in receiving further information on why this may be a constraint.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Product Definition	Regarding the definition, the experts could see a need for not including very small displays, but did not see a need to have an upper limit.	TBD	EPA did not receive any data to suggest that products above the 84 inch diagonal would qualify under the proposed specification power consumption levels. EPA would be interested in receiving data to support the inclusion or exclusion of an upper limit.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Setting Qualification Levels	Member States experts commented on the general principle of using the 25 % qualification level for all specification setting instead of also including a technological approach. E.g. it was mentioned that it may look strange to have a sleep value of 1.4 W instead of 1 W.	Resolved.	The overall qualifying rate for all displays is 23%. The overall qualifying rate for computer monitors is approximately 25%, but the qualification rate by screen size does vary.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Test Requirements	In Product Testing Set-up and Conditions, the dark room conditions provided in Section C was not clear to the experts why they were needed.	TBD	The procedure follows from VESA FPDM Standard 2.0.
Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	TV vs. Displays specification	The experts did not see a need of achieving consistency between the TV and the display specification.	In process.	In preparation for the Display specification development, EPA conducted an analysis of power consumption requirements of TVs and monitors and determined that since these product categories are similar/interchangeable in many aspects, they should eventually converge into one display specification. EPA is making changes to the existing computer monitor specification, and will eventually modify the TV specification, to ensure that all possible products are consistently and fairly covered.

Draft #1 Version 5.0	Jan Viegand & Paolo Bertoldi (European Commission)	9/16/2008	Verification	Verification of the product in EU was raised. The verification is a responsibility of the EU Member States.	In process.	ENERGY STAR has had considerable interest from external entities concerning the product verification aspects of the program. We are working towards resolving these issues and are piloting different approachs in several key product categories.
Draft #1 Version 5.0	Albert Xthona (BARCO - Medical Imaging Division)	9/24/2008	Exemption of medical displays for sleep & off modes	For both Tier 1 and Tier 2, we propose that medically-approved displays 1. be subject to the same sleep-mode and off-mode requirements as all other displays; 2. be exempted from on-mode requirements This exemption could be added to the specification by the following additions: • Section 1a: After "…sold as televisions are not included in the specification.", add "Medical displays are displays that have received a 510(k) clearance from the Food and Drug Administration (FDA). Medical displays are included in this specification, however they are not subject to the on-mode requirements as medical display specifications are subject to criteria established by the FDA." • Following Section 3c: add "Note: While medical displays as defined in section 1 are not subject to on-mode criteria, they must comply with Sleep and Off mode criteria to be ENERGY STAR qualified.	Resolved.	It is EPA's intention that, as in V4.1, all ENERGY STAR displays must qualify under all three separate energy efficiency modes - On, Sleep, and Off.
Draft #1 Version 5.0	Albert Xthona (BARCO - Medical Imaging Division)	9/24/2008	Exemption of medical displays for sleep & off modes	Inclusion of medical displays in the ENERGY STAR program through compliance with sleep mode and off-mode criteria will promote good design practices and enable healthcare facilities to make good, safe choices when buying new display systems. While we could work towards a separate specification of on-mode criteria for medically-approved displays, we believe that the regulations of the FDA that ensure safety and efficacy are most applicable.	Resolved.	It is EPA's intention that, as in V4.1, all ENERGY STAR displays must qualify under all three separate energy efficiency modes - On, Sleep, and Off.
Draft #1 Version 5.0	Albert Xthona (BARCO - Medical Imaging Division)	9/24/2008	Luminance	• Luminance uniformity over the entire screen surface. This consumes more power in three ways. Some light is absorbed in the process of making the screen uniform. The luminance measured in the center is present over the entire screen, thus more total light is emitted at a given measured value. Finally the associated circuitry consumes power. • Brightness is defined over viewing angle. More total light can be emitted by the medical display than by a display optimized for on-axis viewing. • Color temperature matches X-ray film. To match the color characteristics of blue base or clear base X-ray film, medical displays require additional power to reach the same luminance. • Initial luminance must be maintained over the lifetime of the displays. Medical displays are calibrated to a luminance level that will be maintained for five years. The displays perform automatic adjustment of the luminance level over time and in response to changing temperatures in the room. Feedback circuitry and internal sensors require additional power to accurately perform this automatic adjustment.	Resolved.	EPA appreciates the comments on luminance, but since the comments are relevant only to medical devices and since medical devices do not qualify for ENERGY STAR under the criteria for the three modes, EPA is hesitant to apply these to the draft 2 display specification.