Final Draft Versions 4.0 and 5.0 ENERGY STAR® TV Specification Comment Response Summary Document
September 3, 2009

This document is intended to summarize comments submitted by stakeholders in response to the Final Draft Versions 4.0 and 5.0 (formerly called Version 3.1 Tiers 2 and 3) ENERGY STAR TV specification and includes an EPA response to each comment. Please note: this summary includes only those comments that EPA received permission to make public.

Topic	Comment	EPA Response
ON Mode: Version 4.0	One stakeholder stated that the 4.0 requirements are too stringent and that many more highly featured and larger products would be unable to meet the requirements One stakeholder disagreed with EPA's decision not to accept a counter proposal that would target the top performers in each size category rather than targeting the top performers across all sizes.	EPA's goal is that when Version 4.0 goes into effect that approximately 25% of available models will meet the ENERGY STAR requirements with reasonable selection across screen sizes. Based on EPA's current dataset, there are feature-rich models from 20 different television manufacturers available today that currently meet the proposed ON Mode requirements in a range of price points and sizes, utilizing conventional backlight technology (i.e., CCFL) and some models utilizing emerging, more efficient backlight technologies (e.g., HCFL, LED). The manufacturers with models that meet the Version 4.0 requirements include most of the top tier brands representing a large percentage of the overall television market. In addition to models that are available today that meet the proposed ON Mode requirements, there are many models that are within 5 to 15% of the proposed requirement for each size category. EPA expects that manufacturers will make relatively small modifications to these units in order to meet the Version 4.0 requirements by the effective date of May 2010. For instance, for models in the 32-inch category (32- and 37- sets), 12% of models available today meet the proposed Version 4.0 requirements. An additional 14% of all 32-inch sets in the dataset are currently within 5% of the ON Mode requirement. EPA expects developments can be made to improve the efficiencies of these sets by the effective date of May 2010. EPA did not adopt the complete counter proposal from stakeholders that increased the slope of the Version 4.0 line allowing greater qualification for televisions larger than 32 inches. EPA did not accept this proposal because market trends suggest qualification rates would greatly exceed 25% of available products when the specification goes into effect. As a reminder, one of ENERGY STAR's guiding principals is to identify the top performers when it comes to energy efficiency within a product category. Additionally, rough estimates indicate that the counterproposal would result in significant lost financial and environmental savings. For illustrative purposes, assuming CEA's sales projection of close to 20 million 40-inch and larger units in 2010 and roughly 5 million units meeting the proposed ENERGY STAR requirement, the counterproposal would result in 196 to 780 million pounds of lost annual CO2 emissions compared to the EPA proposal as well as $14 to $58 million in lost annual consumer savings. Ranges reflect differences in watts of the two proposals for key screen sizes. Smaller differences correspond to 40-inch models and the larger differences to 60 inch models.

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<tr><td></td><td>A stakeholder questioned the impact that non manufacturer stakeholders have had on the specification development process.</td><td>ENERGY STAR stakeholders include a wide range of entities, including equipment manufacturers, trade organizations, non-governmental organizations, public utility companies, and state and international regulatory agencies. EPA must weigh concerns of all its stakeholders in order to make well-informed decisions. Furthermore, the requirements in the Final Draft specification are a result of data and information from a number of sources including: data from manufacturers, conversations directly with television manufacturers, manufacturer Web sites, conversations with component manufacturers, industry reports from well-known research companies that were endorsed by stakeholders during the last specification revision process, and tradeshow information in developing the proposed specifications. EPA believes that the combination of these different sources is necessary in setting levels that ensure ENERGY STAR is associated with leadership products in 2010.</td></tr>
<tr><td></td><td>One stakeholder stated that data provided by EPA regarding cost of models that CAN Not meet the 4.0 requirements compared to models that CAN meet 4.0 showed a substantial price difference for products that can meet 4.0, bringing into question the cost effectiveness of the requirements.

The stakeholder also noted that there remains a large price differential for new technology (e.g., LED backlit LCD TVs) and this differential is unlikely to erode quickly enough to produce market share levels meeting EPA estimates.</td><td>EPA would like to clarify one point that was noted in the Final Draft specification and the Draft 2 Comment Response Summary Document. EPA incorrectly noted that the Manufacturer Suggested Retail Prices (MSRPs) for the top 15 best-selling models for each size category aligned closely with the range of listed MSRPs of televisions in those same size categories that currently meet the Version 4.0 requirements. EPA meant to write that the retail prices, not the MSRPs, for the top 15 best-selling models for each size category aligned closely with the range of listed MSRPs of televisions in those same size categories that currently meet the Version 4.0 requirements. The reason MSRPs for televisions that meet the Version 4.0 specification were used was because in some cases models have not yet made available for sale publically, so only the MSRP is available. As the MSRP is often higher than the actual retail price, EPA notes that the MSRP range compares similarly to the retail price range of models that currently can not meet the Version 4.0 requirements. Additionally, EPA would like note that the range of MSRPs for models that can meet the Version 4.0 requirements indicates that consumers have sufficient choice within each size category at different price points, from entry level to top of the line models, and sizes, utilizing conventional backlight technology (i.e., CCFL) and some models utilizing emerging, more efficient backlight technologies (e.g., HCFL, LED). EPA acknowledges the price differential for some of the newer backlight technologies, but expects this price differential to decrease in the coming years as more televisions adopt the technology. Finally, EPA understands there is a full line of LED backlit televisions from a major manufacturer that will be on the market by in the coming months whose prices will be comparable to models utilizing traditional CCFL backlight technology.

<table>
<tr><th></th><th>32”</th><th>40”</th><th>46”</th></tr>
<tr><td>ENERGY STAR V4.0 Models:
Range of MSRPs</td><td>$400 - $1100</td><td>$1100 - $1900</td><td>$1400 - $3000</td></tr>
<tr><td>Non V4.0 Models:
Range of Retailer Prices for Top 15 Selling Models from Major Retailer</td><td>$380 - $1100</td><td>$750 - $1800</td><td>$1298 - $3200</td></tr>
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ON Mode: Version 5.0	Several stakeholders suggested that rather than setting 2012 requirements now, when uncertainties regarding products and the market remain, that EPA set requirements closer to their effective date. Other stakeholders questioned whether manufacturers will be able to meet the requirements especially in larger screen sizes and disagreed with a perceived shift in focus from efficiency to consumption levels. One stakeholder noted that efficiency may suffer as a buying criterion if consumers do not have a choice of ENERGY STAR products in larger screen sizes. Several stakeholders offered a counterproposal of 147 watts for televisions greater than 60 inches, which was described as aggressive but achievable and more likely to motivate change in products, as an alternative to the EPA proposal.	By setting a future tier (May 2012), EPA is providing advance notice, ensuring that ENERGY STAR specifications are revised in a timely manner and that the ENERGY STAR is a mark of superior performance despite the rapid evolution of this product category. EPA is committed to revisiting requirements before they go into effect and will revise the requirements as needed. EPA's decision is largely due to an issue that is present in several ENERGY STAR program areas and needs to be addressed to maintain the integrity of the ENERGY STAR label and program. The issue in this case is what TV sizes can the federal government credibly designate as preferable from an energy and environmental perspective. This has become an important issue as the sizes of TVs and energy use continue to grow. To address this issue, EPA considered limiting the TV-size eligible for the ENERGY STAR label to 50 inch TVs or smaller. The proposed energy consumption level for TVs larger than 50 inches arose out of the recognition that if these larger TVs could meet limits associated with a 50 inch TV, excluding them would be unwarranted. Consistent with this rationale, EPA accepts the potential that there may be more limited selection of ENERGY STAR products in the largest of screen sizes under Version 5.0. Further, EPA knows that there will be some availability of products with these screen sizes; there is already qualifying product in TV sizes greater than 50 inches, and we expect that the number of products that will meet the 5.0 requirements will only grow between now and 2012. EPA is committed to tracking this market carefully and revisiting the Version 5.0 requirements before they go into effect if the selection of qualifying models raises questions regarding the impact of the label. As appropriate, EPA will reconsider manufacturers' proposals or any new input at that time. EPA has not accepted the stakeholder counterproposal of a consumption level of 147 watts beginning at 60 inches, as there is evidence that there will be qualifying products between 50 and 60 inches. In the last month, a 55 inch product has been announced that meets the proposed Version 5.0 requirements today, almost three years in advance of the requirements. In addition, at the 2009 Society for Information Display International Symposium, Seminar and Exhibition, television manufacturers were displaying numerous different television models, between 32- and 55-inches, with power consumption values that would easily meet the proposed Version 5.0 ON Mode requirements, even with uncertainty accounted for due to power measurements not following IEC test procedure. Although these units are prototypes now, these prototypes suggest significant manufacturer effort to lower power use and increase television efficiency, all while maintaining or improving performance. In the next three years, it seems likely the technology shown could be found in mainstream consumer televisions. Further, manufacturer and other industry experts project significant reductions in TV energy consumption in the next year. Leading manufacturers have announced that half or more of the models they ship in the next year will make use of more efficient back lighting (LED) – between 50 and 100% of models. The models that meet or are close to the Version 5.0 requirements today, use LED backlights. Trends suggest that as the prevalence of this lighting option increases and the cost decreases over the next nearly three years, there will be meaningful availability of LED backlighted sets for the consumer in the larger TV sizes. EPA will continue to closely monitor the marketplace over the coming years to verify these efficiency trends.

DAM	Several stakeholders requested that EPA allow ENERGY STAR TVs with DAM capability to ship with this feature enabled so as not to disadvantage the technology and data delivery services. A stakeholder also asked that DAM requirements only apply if the Dam feature is shipped enabled.	EPA has removed the requirement that DAM must be disabled upon shipping and can only be enabled by a user activating the feature in the Final Specification. EPA will require that any TV with DAM must meet the energy requirement noted in the Final specification when in DAM, even though DAM may be disabled upon shipping. If TVs offer this feature there is a high likelihood that the feature will be enabled by the user. In order to maximize energy savings with this feature, the requirements for DAM will apply to all models with DAM functionality regardless of how the product is shipped.
	Several stakeholders requested that the ENERGY STAR 5.0 specification set DAM power requirements not to exceed 40 watt-hours, instead of the proposed 20 watt-hours. The stakeholders noted current requirement in the 5.0 specification of 20 Watt-hours represents a 75% reduction in power as ENERGY STAR moves from the 4.0 specification to the 5.0 specification.	EPA based the Version 5.0 requirement on conversations with industry experts and manufacturers to ensure the requirement was technically feasible, while realizing real energy savings. EPA understands that DAM technology is rapidly improving and will likely use less energy in the coming years. EPA expects as Ethernet connected televisions become more prevalent in the market, and a separate DAM while in Sleep Mode may no longer be necessary. EPA will continue to track the DAM trends closely.
DAM Testing	One stakeholder offered suggestions on testing for DAM, including offering to provide a video and data test stream which meets or exceeds DAM power consumption for nearly all households, assuming no errors in transmission.	Based on input from stakeholders, EPA is proposing the following test method for measuring DAM in the Final specification: 1. Ensure that DAM is enabled on the television. 2. Turn the television ON for 48 hours. 3. After the 48-hour period, begin the test stream that will be made available and is representative of nearly all data transmissions. The test stream would assume a fixed data transmission rate. 4. Using an approved power meter, collect the energy consumption (in watts-hours) of the television over the 24-hour period (E_{total}). 5. The E_{total} must be less than energy limit as determined in Equation 2. Equation 2: E_{limit} = 80 watt-hours + (23 hours * Sleep Mode power consumption (in watts measured according to Draft IEC 62301, Ed. 2.0)

Luminance Testing	One stakeholder noted that there should be greater clarity and precision for the test method for measuring luminance. In particular, the method must spell out the distance and angle the measurements must be made from. As written, the tester could choose to make the measurements a few feet away thereby negating any benefits from the luminance restrictions contained in the spec. Other stakeholders noted that while they believe a luminance requirement is unnecessary, they do generally support the proposed testing procedures, as outlined in the EPA email dated July 31, 2009 with few modifications.	Based on input from stakeholders, EPA is proposing the following test method for measuring luminance in the Final specification to provide greater clarity and precision: 1. Ensure the television is set to the Home mode, or the default mode as shipped. 2. The following steps must be performed immediately following On Mode power testing using the dynamic broadcast –content video signal as outlined in Section 4.E.2 of the ENERGY STAR specification. 3. Display the three bar video signal provided in IEC 62087 Ed. 2, Section 11.5.5, which displays three bars of white (100%) over a black (0%) background. 4. After the three bar video signal has been displayed for 10 minutes, measure the luminance (Lhome). (See Note 1) 5. Within 1 minute of measuring Lhome, set the television to Retail mode, or the brightest selectable preset mode, and display the three bar video signal. 6. After the three bar video signal has been displayed for an additional 10 minutes, measure the luminance (Lretail). (See Note 2) Note 1: For television sets that are known to stabilize within 10 minutes, this duration may be reduced if the resulting measurement can be shown to be within 2 % of the result that would otherwise be achieved using the full 10 minute duration. Note 2: When possible, measurements of luminance shall be made without disturbing the LMD's measurement position on the display whilst switching between the home-mode and retail-mode. If this is not possible, the tester should replicate the measurement position of the LMD so that measurements in the home-mode and retail-mode are in the same position on the display.
Display Power Management	One stakeholder group requested that this requirement be removed from possible inclusion in Version 5.0. The group believes that only a small fraction of televisions will contain VGA and DVI ports during the time frame covered by Version 5.0. This group also states that there will be limited use of televisions as computer monitors, and thus the cost of adding DPM capability is not warranted.	Consistent with requirements in the ENERGY STAR Displays specification, EPA intends to study this issue and revisit it during the Version 5.0 specification development process. EPA intends to include a requirement that televisions with computer capability must offer Display Power Management for VGA and DVI connectors if the information available supports this proposal.

CEA-2037	CEA noted that CEA-2037, *Determination of Television Average Power Consumption*, will be sent to CEA standards committee R4 Video Systems shortly for a 30-day email ballot. According to CEA, the document specifies an unambiguous recipe for obtaining the power numbers that get publicly reported for a given TV model. They urge EPA to require power measurement using the methods specified in IEC 62087, Ed 2.0, Section 11 as defined by CEA-2037. Thus, CEA-2037 will serve as a guide implementation of IEC 62087. One stakeholder noted several comments concerning the incorporation of the CEA test procedure into the ENERGY STAR specification: concern about how TVs are defined and how units with a separate tuner are considered; ambiguity when testing multiple function TV products (e.g., TV with built-in DVD player); a need for further clarity concerning the sleep mode definition in the standard, especially in regards to network-enabled TVs, and concern about the application of the test method to measure TVs in sleep mode; and permitting the user to test and report data in any of the selectable modes, not just home mode.	EPA has incorporated draft CEA-2037 in the specification to provide additional clarification on using IEC 62087, Ed. 2.0, Section 11 for measuring TV On Mode power, pending its finalization. EPA believes that doing so helps to further domestic harmonization of TV testing (i.e., by regulators and voluntary programs). EPA recognizes, however, that CEA-2037 became available later in the specification development process, and thus ENERGY STAR stakeholders had more limited ability to comment on this testing standard. Therefore, EPA will share comments the Agency receives on this standard with CEA and request that they be considered. EPA will make every effort to keep stakeholders informed of changes to this document as it moves to finalization.