

**ENERGY STAR Televisions Version 9.0 Draft 1 Comment Responses**

Subtopic	Stakeholder Comment Summary	EPA Response
Color Gamut	Two stakeholders noted that there is a relationship between the color gamut of a display and its overall power consumption. Both recommended investigating this relationship and including adjustment factors for TVs with wider color gamut, as appropriate, and in a way similar to what is currently proposed for resolutions.	EPA has reviewed preliminary data regarding the efficiency differences between products with different color gamut. Despite the validity of the technical reasoning behind why color gamut size should impact efficiency, there appears to be little evidence that the relationship between color gamut and power is as strong as that between efficiency and resolution. As such, no adjustment factor is being proposed to accommodate color gamut. If any stakeholder has data to support an allowance for products with wide color gamut, they are invited to submit such for consideration.
Wake Time	One stakeholder recommended the addition of criteria that sets a maximum Wake Time for models that wish to qualify for ENERGY STAR as a quality control measure because it is believed that this directly relates to consumer satisfaction.	EPA believes that the market is taking care of start time as shown by the proliferation of Quick Start. Further, EPA has observed that TVs with longer wake times almost always offer a Quick Start feature to give added convenience at the cost of some Standby Mode efficiency. To account for these effects, the current iteration of the CTA-2037C test procedure instructs that testing should be performed with Quick Start Functionality enabled, if possible, if the default Wake Time is measured to be greater than 10 seconds.
Criteria Based on Screen Size	One stakeholder recommended to adjust the criteria so that the anticipated pass rate of TVs with a screen diagonal of less than 52.5 inches is approximately 25% because they represent such a large share of overall TV sales.  One stakeholder has requested that EPA provide breakouts of expected pass rates by screen resolution and annual total energy consumption (TEC) of passing/failing TVs as the current criteria seem overly generous.	EPA has revised criteria levels and adjustment factors in an effort to put equal stringency on TV models of all sizes. This has led to an overall anticipated pass rate of 20%.  EPA will include information on how pass rates are broken out for TVs of different native resolutions in the forthcoming Draft 2 webinar. This information will also be available in the Draft 2 Data Package.
8K Criteria	One stakeholder recommended delaying setting criteria levels for 8K models until there are more models available to be tested. They stated that because the technology is still relatively new, these models are likely to get more efficient in coming years, which could make Version 9.0 criteria overly generous. The stakeholder indicated that this could be accomplished by excluding 8K from Version 9.0 and introducing them in a Version 9.1.	EPA acknowledges that because 8K is a relatively new technology, the technology itself is likely to continue to evolve and gain market share. However, the Agency believes that the levels set by a Version 9.0 specification will be able to accommodate this technology. If 8K models demonstrate gains in efficiency so significant as to make Version 9.0 levels inappropriate, this technological development is likely to affect other resolutions as well, warranting the development of a Version 10.0 specification.
High Contrast Ratio	Two stakeholders suggested that EPA reevaluate the need for a high contrast ratio (HCR) adjustment factor because of potential future display technologies that may make such an adjustment factor unnecessary.	EPA acknowledges that as new technologies emerge, these proposed criteria levels may need to be adjusted. However, there is no current data to support that future technologies will increase efficiency while providing a similar contrast ratio or when these technologies may be available on the market.  Because current units qualifying for the HCR adjustment factor provide a unique viewing experience that consumers desire, as is evident by their market share, the Agency believes it appropriate to account for the increase in power consumption with an allowance that places equal stringency on these models. The appropriateness of the HCR adjustment factor will be reevaluated as additional models that qualify for it are introduced to the market or when new technology is available that demonstrates similar contrast ratio with increased efficiency.
Standby-Active Low Mode	One stakeholder requested that EPA consider lowering the proposed standby-active, low power limit from 2 Watts down to 1 Watt if the data supports it to incentivize lower power use in the largest portion of the duty cycle.	EPA has proposed a 1 W Standby-Active, Low Power requirement in the Draft 2 specification. Current data show that several manufacturers have managed to configure their TVs to remain in this mode at well below 1 W.
Standby-Active High Mode	One stakeholder recommended that the Version 9.0 specification include a time limit for operation in Standby-Active, High Mode. They noted that even though each instance is limited to 15 min in the current draft, there is no limit to the number of times a unit can enter the mode from Standby-Active, Low Mode in a period of time.	EPA has not introduced a requirement for the maximum number of times a TV can enter Standby-Active, High Mode in a given timeframe because it is understood that this is a highly infrequent occurrence that is necessary to perform critical updates.
HDR Preset Picture Setting	One stakeholder requested that EPA expand the requirements for HDR Preset Picture Settings to all TVs capable of displaying HDR content in an HDR format, regardless of whether or not this is a user-selectable setting.	EPA has clarified in the Draft 2 specification that all models capable of displaying content in an HDR format shall be tested as such, regardless of whether this is a user-selectable feature or an automatic function.
Timeline	Several stakeholders indicated that they intend to participate in a Consumer Technology Association (CTA) working group, whose purpose it is to develop and refine a new test procedure to measure the efficiency of TVs. They requested that EPA defer finalization of Version 9.0 criteria levels until after this development process yields testing data for reference. Additionally, they requested that ENERGY STAR adopt the test procedure for reference in the specification, once complete.	Since publishing the Draft 1, EPA has begun to work with stakeholders in the Consumer Technology Association (CTA) R4 Working Group 13 to develop the CTA-2037C: <i>Determination of Television Set Power Consumption and Average Luminance</i> test procedure that is based on the same approach to measuring TV power and projected luminance as the additional test procedures that were outlined in Draft 1. As such, and so long as the working group continues to make timely progress towards the finalization of CTA-2037C, the Agency intends to reference it for use in this specification. This will allow for ENERGY STAR to align with the industry accepted approach to measuring TV efficiency and reduce test burden associated with having an additional test method.  Additionally, the dataset used to create criteria levels for the Draft 2 specification is comprised of models tested per the most recent iteration of this test procedure.
Standby-Active Low Mode	One stakeholder has suggested that TVs with wake-by-cast and wake-by-voice features should be tested with the features enabled when measuring Standby-Active, Low Mode Power. They also recommended that network traffic should be present on the connected network when performing this testing.  One stakeholder requested that EPA provide guidance on the minimum period of time for the Standby-Active, Low testing to be performed. They noted concern that some TVs draw power at high levels for hours after use before dropping to a steady standby power level.  One stakeholder recommended that EPA investigate whether over-the-air (OTA) and over-the-top (OTT), video interfaces affect power consumption because despite streaming becoming more popular, these types of input remain popular for watching local broadcast channels.	EPA understands that maintaining these "wake-by" features can cause an increase in Standby Mode power consumption, especially when network traffic is present. To capture these effects, the current iteration of the CTA-2037C test method includes provisions for testing with the mentioned features enabled and providing repeatable network traffic via a packet generator.  EPA has not seen data to support the concern that some models can take several hours to reach a steady power level once engaging a Standby Mode. However, a similar effect has been seen over the course of several minutes. To account for this, the current iteration of the CTA-2037C procedure has Standby-Active, Low Mode Power measured for 40 minutes and the average power is calculated for the last 20 minutes only.  Previous research performed by Northwest Energy Efficiency Alliance (NEEA) in 2018 to investigate whether OTA or OTT inputs impact efficiency has yielded data to support that they do not. As such, EPA has not introduced provisions for these types of inputs for consideration by the CTA R13 Working Group.