

Draft 2 Version 7.0 ENERGY STAR Televisions Specification Stakeholder Comment Summary and Response

Topic	Subtopic	Stakeholders Comment Summary	U.S. Environmental Protection Agency & U.S. Department of Energy Response
Definitions	8K Ultra High Definition	Three stakeholders did not support the creation of allowances for 8K Ultra HD, at this time, with two noting that 8K televisions could benefit from the same UHD adder as 4K as long as there is no maximum resolution limit on the adder.	EPA thanks stakeholders for their comment and is not providing a separate allowance for 8K Ultra HD at this time, given the limited amount of available data and limited number of products that are currently 8K. EPA will continue to monitor the market going forward to determine the appropriateness of such an adder.
Definitions	Other	One stakeholder agreed with removing definitions for Power Overhang State, Point of Deployment (POD) Module, and HEVC, and suggests removing the redundant Wake-on-LAN (WoL) definition.	EPA thanks the stakeholder for the comment and has maintained the exclusion of these definitions, including WoL, in the Final Draft specification.
Definitions	Picture Settings	One stakeholder supported the inclusion of 'Figure 1: Illustration of Picture Settings for TVs with a Forced Menu' and 'Figure 2: Illustration of Picture Settings for TVs without a Forced Menu', for clarity, though it noted that these figures differ slightly from similar illustrations in CEA-2037-A and the upcoming IEC 62087-3.	EPA notes the slight difference in the CEA-2037-A illustration and will monitor the development of IEC 62087-3 illustration as it is finalized. However, EPA has kept the proposed figures to remain consistent with the Federal test methods.
Definitions	Ultra High Definition	Four stakeholders requested a more specific definition for ultra-high definition TVs. Two stakeholders noted that there are more differentiating features besides Vertical Native Resolution. One stakeholder suggested using the Consumer Electronic Association's (CEA) definition for UHD, while another notes that frame frequency and scan mode could be added. A third questioned why 'Native Vertical Resolution' is used, as opposed to 'native resolution', and suggested adding in horizontal resolution as well.	EPA has kept the proposed high resolution On Mode power allowance for ultra-high definition TVs based on Native Vertical Resolution, which provides a clear differentiator between ultra-high and high definition TVs. Once the CEA's definition of UHD TVs is finalized, EPA will consider including definition in a future specification to harmonize with a widely used, accepted definition. At this time, EPA will retain the allowance requirement based only on Native Vertical Resolution instead of total native resolution for simplicity and to remain harmonized with previous specifications.
Future Specification Revision		One stakeholder requested that EPA closely monitor the market penetration, rather than on an annual basis, to ensure that updates to the specification are scheduled before market penetration climbs too high.	At this time, EPA monitors the market on an ongoing basis and proposes updating the specification once the market share is deemed high. Given EPA's experience with televisions thus far, where the market share usually climbs sharply, a revision has been warranted every 18 to 24 months.
General Requirements	External Power Supplies (EPSs)	One stakeholder agreed with the proposed update to the external power supply requirements, noting that EPSs must meet Federal regulations. However, another requested to align the effective date of the requirement with that of DOE standards or February 10, 2016.	As EPA seeks to highlight ENERGY STAR certified products that demonstrate efficiency above any national standard, EPA has kept the effective date of the EPS requirement.
General Requirements	Non-Default Picture Settings	Two stakeholders commented in favor of EPA's proposal for non-default picture settings to be recognized as ENERGY STAR qualified if they are able to meet the On Mode requirements.	EPA thanks stakeholders for their comment and has kept the proposed change in the Final Draft.
General Requirements	On-screen Information	Four stakeholders recommended harmonizing the language in sections '3.2.4 Preset Picture Setting Menu' and '3.2.5 Standby-Passive Mode and Standby-Active, Low Mode Settings' as follows: "ii. Display on-screen information that enabling the optional features and functionalities may change the energy consumption of the product." These stakeholders argued that allowing more general language instead of the ENERGY STAR mark or copy would minimize product changes for products that lose certification either from a design revision or a specification change. One stakeholder additionally requested that the requirement to display on-screen information should be optional for products that meet the specification regardless of the selected preset picture setting.	In response to feedback, EPA has harmonized language in section 3.2.4 'Preset Picture Setting Menu' and section 3.2.5 'Standby-Passive Mode and Standby-Active, Low Mode Settings.' Additionally, EPA is proposing that TVs with a physical ENERGY STAR label affixed to the front of the TV have the option of omitting the ENERGY STAR mark given the consumer has some indication that the model is ENERGY STAR certified. A model without the physical label shall provide on-screen information with the electronic ENERGY STAR mark as currently required under the Version 6.1 specification. This proposal provides flexibility while maintaining consumer awareness of the product's ENERGY STAR certification.
General Requirements	Standby-Passive Mode and Standby-Active, Low Mode Settings	One stakeholder agreed that clock-based power management under Standby conditions should not be required.	EPA thanks the stakeholder for the comment and has kept the proposed change in the Final Draft, where the clock-based power management in Standby conditions is not required.
General Requirements	Thin Client Capability	One stakeholder recommended the collection of additional information about energy consumption due to set-top box Thin Client capability, while another supported reporting of Thin Client Capability and also recommended providing an allowance.	At this time, EPA lacks appropriate data on energy consumption of additional Thin Client Capability; initial data suggest that Thin Client Capability can be employed with minimal additional energy resources. At this time, EPA will retain the reporting requirement for the presence of Thin Client Capability and whether this feature is enabled in the default as-shipped settings. If it is enabled by default in the default as shipped settings, the energy consumption will be captured in the On and Standby-Passive or Standby-Active, Low Modes. EPA will monitor the market to determine the prevalence of this feature and whether additional testing and or other provisions are needed.

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Luminance Requirements		<p>Two stakeholders expressed support for limiting the minimum luminance in the Default Picture Setting to 293 cd/m² for the brightest TVs (luminance greater than 450 cd/m² in the Brightest Selectable Preset Picture Setting).</p> <p>Three other stakeholders commented that that luminance requirement could be further relaxed, and should be set at 228 cd/m² for TVs brighter than 350 cd/m². Two of these stakeholders noted that 228 cd/m² is still brighter than the median in the EPA dataset.</p>	<p>EPA evaluated its current and past datasets for products qualified to Versions 3.0 through 6.0 and determined that median default screen luminance ranges from 216 to 253 lux. Moreover, EPA notes that the average screen luminance in the current dataset is 85% of maximum screen brightness, even though manufacturers have the opportunity to ship dimmer at 65% of the maximum brightness. Thus, EPA believes that manufacturers are shipping at a screen brightness optimized for home viewing. Thus, EPA proposes that a floor of 228 cd/m² be permitted for TVs with a maximum Brightest Selectable Preset Picture Setting that is equal to or brighter than 350 cd/m².</p>
On Mode Power Requirements	Dataset	<p>Three stakeholders suggested supplementing the dataset with models tested to the DOE Final Rule, taken from the California Energy Commission or DOE databases. Another stakeholder suggested EPA eliminate all models that were available before April 2013 from the database, to ensure the data reflects current, more efficient models.</p>	<p>The Final Draft EPA dataset includes all models from the CEC database (both non-ENERGY STAR and ENERGY STAR certified models) as well as additional ENERGY STAR models for a total of 2207 unique models. In its analysis, EPA accounted for duplicate models entries where possible based on the reported model number in both databases. EPA has not included models from the DOE database as it is not yet publicly available and the CEC database should be similar enough to the DOE database.</p> <p>Per the stakeholder suggestion, EPA excluded models entering the market before April 2013 in a separate analysis and found that it only altered the model pass rate by 0.2% compared to the entire set of CEC and ENERGY STAR models.</p>
On Mode Power Requirements	High Resolution Allowance Amount	<p>Three stakeholders recommended that the High Resolution Allowance be increased to 75%, while four stakeholders supported the 55% allowance. One stakeholder noted that currently 5 Ultra High Definition (UHD) models meet the Draft 2 proposal, with one of these models currently meeting by a wide margin.</p>	<p>Based on the EPA dataset, the proposed high resolution allowance achieves a similar pass rate for Ultra High Definition and high definition TVs. Given that EPA raised the On Mode Power Requirement to recognize additional TVs over 60 inches, EPA has adjusted the high resolution allowance from 55% in Draft 2 to 50% in the Final Draft. Doing so maintains the same stringency that was proposed in Draft 2. Based on how rapidly the television market evolves, EPA continues to anticipate an increased selection of ENERGY STAR certified UHD models by the time the specification takes effect in late 2015 as technology and designs are further optimized.</p>
On Mode Power Requirements	High Resolution Allowance Expiry	<p>Three stakeholders requested an extended expiration date for the high resolution allowance of December 31, 2016/January 1, 2017, while another stakeholder opposed the extension and requested the date be no later than May 1, 2016 (as proposed in Draft 2).</p> <p>Two stakeholders commented that EPA should reassess the energy savings opportunities ahead of the May 1, 2017 expiration date in order to determine whether the allowance is still necessary, or whether requirements could be tightened.</p> <p>Three stakeholders, in contrast, argued that there should be no expiration date. One stakeholder commented that the allowance should be reassessed during the next specification revision. While another noted that no technical data is provided to explain the selection of this expiration date.</p> <p>One stakeholder alternatively recommended a gradual decrease in the allowance, as opposed to a sudden expiration date.</p>	<p>In the Final Draft, EPA is proposing to remove the May 1, 2017 expiration date for the high resolution allowance as included in Draft 2. Doing so provides EPA greater flexibility in assessing when to revise the specification and determine the extent to which an adder is necessary to reflect the top performing products with ultra high resolution. EPA will reassess the allowance under the Version 8.0 specification development process as needed.</p>
On Mode Power Requirements		<p>Five stakeholders supported the proposed On Mode Power Requirements, noting that a 16% qualification rate today will translate to a higher one when the specification takes effect.</p> <p>Four stakeholders did not support the proposed On Mode Power Requirements. Three stakeholders noted that while previous energy efficiency advances have come quickly, further advances will be smaller and more difficult due to slowdowns in the efficacy of LEDs and a lack of other improvements on par with Automatic Brightness Control, edge lighting, and home/retail picture settings.</p> <p>Two stakeholders also noted that TVs larger than 60 inches will have trouble meeting the proposed levels and must be set dimmer to qualify. One of these stakeholders therefore proposed a 20% qualification rate for models in this size bin.</p>	<p>In response to stakeholder feedback that the Draft 2 On Mode Power requirements were recognizing disproportionately fewer large models (above 60 inches), EPA has revised the coefficients in the P_{ON_MAX} equation raising the limit slightly higher with increasing screen area.</p> <p>The EPA Final Draft dataset includes all of the California Energy Commission models supplemented with models from the EPA ENERGY STAR Version 6.1 database tested to the DOE Final Rule for a total of 2207 unique models. The overall dataset Final Draft On Mode Power pass rate for all HD models on the market today is nearly 16 percent. At least 10 major manufacturers are represented among the set of models meeting the proposed Final Draft On Mode Power Requirements. Based on how rapidly the television market evolves, EPA continues to anticipate a more than adequate selection of ENERGY STAR certified models by the time the specification takes effect in late 2015.</p>
Scope	Standby-Passive Mode	<p>One stakeholder expressed support for the clarification that TVs without Standby-Passive Mode are still eligible under the Scope of ENERGY STAR Version 7.0 specification.</p>	<p>EPA thanks the stakeholder for the comment and has kept the proposed change in the Final Draft.</p>

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Scope	TVs with Main Battery	One stakeholder expressed support for the exclusion of battery-powered television sets.	EPA thanks the stakeholder for the comment and has kept the proposed change in the Final Draft.
Specification Effective Date		<p>Three stakeholders commented that the effective date of the Version 7.0 specification should be no earlier than March 2016. One stakeholder mentioned that new models are often introduced in the 2nd and 3rd quarter, while two other stakeholders noted that late summer represents a time where both retailers and manufacturers are preparing for the holiday season.</p> <p>One stakeholder did not comment on the effective date, but requested a full nine months between finalization and effective date for manufacturers to redesign and certify products. That stakeholder requested EPA-recognized certification bodies (CBs) stop certifying products to the current version 30 days prior to the effective date of the new version, as was provided in the past, rather than six months prior, as is currently done.</p> <p>Finally, one stakeholder supported the proposed summer 2015 effective date due to the already high market penetration of models meeting the ENERGY STAR Version 6.0 specification, but if the effective date is moved, requested that EPA re-evaluate the On Mode power requirements closer to the new effective date.</p>	EPA will finalize the Version 7.0 specification by the end of 2014, such that the Version 7.0 specification will take effect at the end of September 2015. However, Partners are able to certify products to the new specification as soon as it is final. EPA notes that CBs are to stop certifying products to the current version 4.5 months before the effective date of the new version, not six months. Moreover, EPA's experience with this product category indicates that, though approximately 16 percent of the current market can meet EPA's proposed levels in Version 7.0, many more models will meet the requirements in the new model year.
Standby-Active, High	Reporting	As part of reporting the presence of Standby-Active, High, manufacturers are to include which features and functions require the TV to enter the Standby-Active, High mode. Based on initial feedback from manufacturers, most TVs enter Standby-Active, High Mode, if at all, for a very short period of time on a sporadic basis, thus drawing a limited amount of additional power. Over the coming year, EPA will work with stakeholders to explore the frequency and duration of features and functions that require the TV to enter this mode over the coming year, rather than require that it be reported to EPA through the Agency's certification process. Based on this increased understanding, EPA will determine if further attention is needed in a future revision to the specification.	As part of reporting the presence of Standby-Active, High, manufacturers are to include which features and functions require the TV to enter the Standby-Active, High mode. Based on initial feedback from manufacturers, most TVs enter Standby-Active, High Mode, if at all, for a very short period of time on a sporadic basis, thus drawing a limited amount of additional power. Over the coming year, EPA will work with stakeholders to explore the frequency and duration of features and functions that require the TV to enter this mode over the coming year, rather than require that it be reported to EPA through the Agency's certification process. Based on this increased understanding, EPA will determine if further attention is needed in a future revision to the specification.
Standby-Active, High	Timing	Two stakeholders expressed support for the proposed 15 minute time limit requirement for a TV to return to Standby-Active, Low from Standby-Active, High in the default as-shipped state.	EPA thanks the stakeholder for the comment and has kept the proposed change in the Final Draft.
Standby-Active, Low Mode	Power Requirements	<p>Six stakeholders supported the proposed 3.0 W power limit for Standby Active, Low mode. One stakeholder, however, requested that EPA provide data in support of the limit, given that Partners report power in this mode below 1.0 W or greater than 10 W. Another stakeholder requested that the limit apply to other functions, not just those available as-tested and suggested delaying the requirement for one year to allow for the necessary changes in products to permit compliance.</p> <p>Three stakeholders recommended following the precedent set by the European Union network standby regulation and setting a 6.0 W limit through 2017.</p> <p>Another stakeholder further commented that a 3 W limit is too simplistic and does not reflect the varied functionality that may be present in Standby-Active, Low Mode and referred to the additional allowances in the EU network standby regulation (EU No. 801/2013).</p>	EPA has kept the proposed 3 W power limit for Standby Active, Low mode for the Final Draft. In response to stakeholder feedback, EPA reviewed other consumer products with Wi-Fi, including printers with Wi-Fi connections that had measured Standby around 2.5 to 3.5 W in 2011. EPA also believes there have been significant improvements in Standby Active power given the need to save battery power in mobile network devices such as tablets and cell phones. For example, in September 2013, the International Energy Agency 4E Standby Power Annex released a report titled "Power Requirements for Functions" which includes data on the power consumption of the latest Ethernet controllers, Ethernet ports, and Wi-Fi transceivers, as well as information such as ac-dc power supply and dc-dc component conversion efficiency assumptions. The report states, for example, that an idle Ethernet link without Energy Efficient Ethernet enabled requires 0.373 to 0.583 W of ac power, while an Idle Wi-Fi transceiver requires 0.036 to 0.250 W of ac power. The latest Institute of Electrical and Electronics Engineers (IEEE) 802.11 standard for Wi-Fi includes power management features that can be integrated into products to deliver significant power savings. Given these developments, the 2011 European Union 3 W target for Network Standby by 2017 is appropriate and has been retained from Draft 2. EPA will reassess the 3 W limit in a future revision to the specification.
Standby-Active, Low Mode	Reporting	Three stakeholders requested a EPA include a requirement for Partners to submit data on which Standby-Active, Low features are shipped enabled or selectable during initial set up, the power use of these features, as well as information on the amount of time the TV is expected to provide these functions.	EPA will require reporting of information related to features enabled under the default as-tested state and those features not enabled in this state. Given the lack of standard test procedures for testing functions not enabled in the default state and additional burden, EPA will not require reporting of power use of non-default functions. In Version 8.0, EPA will reassess the prevalence and actual use of features not enabled in the default state as features such as voice recognition become more widely available on the market.

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Standby-Passive Mode	Power Requirements	<p>Four stakeholders requested EPA lower the Standby-Passive Mode power limit to 0.3 W from 0.5 W. They noted that according to the CEC database, 96% of TV models have a reported Standby-Passive Mode power of 0.5 W or less, while 65% have a reported power of 0.3 W or less.</p> <p>In contrast, four stakeholders argued that EPA keep the existing Version 6 and Version 7 Draft 2 Standby-Passive Mode power limit of 0.5 W. One stakeholder commented that higher line voltages in other regions will increase standby power beyond 0.3 W. The stakeholder additionally pointed out that the energy savings from a lower limit would be insignificant.</p>	<p>EPA has kept the Standby-Passive Mode power limit at 0.5 W in the Final Draft, as the power savings in the aggregate would be small and could produce unintended consequences. While many models are under 0.3 W in Standby-Passive Mode, there may be beneficial functions that require small amounts of power. For example, a TV might implement additional memory requiring 0.1W- 0.2 W that allows it to enter On Mode with less lag time. This additional memory saves energy as opposed to the alternative of running the processor and other components requiring more power in Standby to facilitate a quick start into On Mode. As such, EPA sees value in a slightly larger budget for Standby-Passive Mode.</p>
Testing	3D	<p>One stakeholder suggested testing 3D TVs in 3D mode to determine if the power usage meets the ENERGY STAR specification limit. The stakeholder emphasized the need to keep 3D mode energy consumption in alignment with the goals of the ENERGY STAR program.</p>	<p>At this time, DOE is not including a test using 3D content because 3D content is uncommon in the market place. DOE may consider such a test in the future if data supports the need to address the power consumption of 3D TVs while displaying 3D content.</p>
Testing	Annual Energy Consumption	<p>Two stakeholders requested that the Annual Energy Consumption metric be updated to accurately reflect the time the TV spends in specific power modes.</p>	<p>The annual energy consumption metric is a part of the federal TV test procedure. DOE may consider updating these values through a rulemaking action if data is presented to DOE that supports an update to the hourly weightings of time spent in each mode of operation.</p>
Testing	Special Functions	<p>One stakeholder commented that they do not support the "testing of special functions or features which are not enabled by default and not included in a user prompt."</p>	<p>At this time, DOE and EPA are not including any additional tests for special functions or features beyond those tested in accordance with the Federal TV test procedure. DOE and EPA will continue to monitor television power consumption in various modes of operation to determine if additional tests are needed to accurately capture the energy consumption of a television in the modes of operation most commonly used by consumers.</p>
Testing	Standby Active, High	<p>Three stakeholders requested EPA and DOE test power consumption in the Standby Active, High mode, with one stakeholder noting that EPA should require Partner reporting of this information and DOE should perform its own independent tests of TV energy consumption in this mode.</p>	<p>There is no established test procedure applicable to all TVs to test Standby-Active, High mode. Creating such a test method is challenging for a number of reasons. One obstacle in its development is the lack of standard downloadable content compatible with every networked TV in standby mode. Another is repeatability concerns given characteristics and capacities of the various networks in which such televisions would operate in such a mode. Finally, it is the current understanding of DOE that a TV would typically spend very little time in Standby-Active, High where it is actively exchanging data with an external source, further lessening the need for such a test. Should DOE become aware of possible content, a method for testing, and a need for such a test, it will consider development of an appropriate test method in the future.</p>
Testing	Standby Active, Low	<p>Three stakeholders requested further guidance for the Standby Active, Low Mode federal test procedure to correct for current inconsistencies in its interpretation.</p>	<p>DOE has previously released guidance regarding standby testing for TVs with network capabilities. This guidance can be found here: http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/tv_standby_faq_2014-04-17.pdf If additional guidance beyond what has already been provided is warranted, please submit a request for guidance directly to DOE.</p>
Testing	Ultra High Definition	<p>Three stakeholders requested testing power consumption of UHD TVs while displaying both UHD content and standard HD content.</p>	<p>At this time, DOE is not including a test using UHD content because UHD content is still new and uncommon in the market. DOE may consider such a test in the future if data shows UHD TVs and UHD content becoming more prevalent in the market.</p>
Voice/Gesture Recognition	Power Requirements	<p>One stakeholder commented that EPA should set a 3.0 W power limit for Voice/Gesture recognition.</p>	<p>At this time, EPA lacks appropriate data on energy consumption on Voice/Gesture recognition. EPA will continue to monitor the market for the prevalence of Voice/Gesture features and seek data on its energy consumption.</p>
Voice/Gesture Recognition	Reporting	<p>Two stakeholders recommended that EPA require reporting related to Voice/Gesture Recognition functionality, with one stakeholder requesting that Partners report whether the televisions have this feature and the amount of time that this feature is enabled by default. One of these stakeholders additionally requested that the Partner report the power consumption of the features.</p> <p>Another stakeholder supported reporting of Voice/Gesture Recognition "so long as reporting is simple and left to the manufacturer".</p>	<p>Under EPA's reporting requirements for On and Standby Modes, manufacturers must disclose whether Voice/Gesture Recognition functionality is enabled by default under the various modes. Doing so will also provide insight as to the energy consumption of this functionality.</p>