

Draft 2 Version 6.0 Computers Comment Summary

Topic	Subtopic	Comment	Response
Toxicity and Recyclability		Two stakeholders commented that Toxicity and Recyclability requirements should not be included in the Eligibility Criteria, nor in the Partner Commitments. Many States are already addressing these issues, and this could duplicate efforts and lead to confusion.	While energy efficiency remains the basis upon which top performers are selected, EPA addresses attributes related to other aspects of product performance in ENERGY STAR specifications as applicable to ensure that overall product performance is maintained relative to a non-qualifying product. By including additional attributes, the ENERGY STAR program seeks to avoid associating the label with models of poor quality or models with features that are not compatible with broadly held consumer or societal interests, thereby preserving the influence of the label in the market. In response to stakeholder concern that placement of toxicity and recyclability requirements in the product eligibility criteria could hinder international harmonization, EPA is proposing that these criteria reside instead in the ENERGY STAR Partner Commitment document, which is unique to the US market. Further, in response to feedback, EPA notes that it is the Agency's intention to harmonize with EU RoHS and that the toxicity and recyclability requirements are not subject to third-party certification. EPA has chosen to use widely accepted international standards for this purpose and to minimize any chance of duplication of effort or confusion.
Toxicity and Recyclability	Specification Language	A stakeholder suggested that "Requirements for Consumer Benefits" be deleted from the specification because the toxicity and recyclability requirements were removed.	EPA has replaced this section with a note referencing the Partner Commitments in the Draft 3 specification.
Definitions	Notebook	One stakeholder proposed a new definition for Notebooks that would include Mobile Thin Clients, Tablets and Slates (as currently defined in the specification), as well as ultrabooks and other easily portable Notebooks. The stakeholder commented that the definition would better reflect how these terms are typically used.	EPA has decided to retain the current definitions for Notebooks---which includes both Tablets and Mobile Thin Clients---but has clarified the definition of Tablets to better differentiate them from devices without keyboards. EPA is proposing to exclude other portable devices from this version of the specification, due to the time that would be required to develop satisfactory definitions and requirements, but looks forward to working with stakeholders to both define these products and set appropriate requirements in a future Version 6.1 update
Definitions	Display	A stakeholder recommended that the definition of Display be updated to correspond with the Version 6.0 Displays specification, removing the reference to legacy Cathode-Ray Tube (CRT) Displays.	EPA has harmonized the definition with the Final Version 6.0 Displays specification.
Definitions	Long and Short Idle	A stakeholder suggested that the Long Idle and Short Idle definitions be based on time from boot based on default power management settings as-shipped, so that the consumer receives the same power consumption that is achieved during testing.	EPA thanks the stakeholder for the feedback, but believes the current ECMA approach that defines the Long and Short Idle Modes by time and functionality is most appropriate given the current capabilities offered in the market. EPA will consider revising its approach in future versions of the specification.
Definitions	Tablets	A stakeholder requested that a wired network port, external video connector, and USB ports be considered hallmarks of a Tablet in addition to the definition along with the non-detachable keyboard.	EPA has retained the keyboard as a method of differentiation until appropriate Slate definitions can be developed in a future update to the specification.
Scope	Slates, Tablets, and Ultra-portable Notebooks	Stakeholders made several comments regarding whether products that are smaller and have fewer features than a typical Notebook Computer should be included in the scope. Some stakeholders commented that such products should be retained in the scope because: <ul style="list-style-type: none"> • They are used in similar ways as office notebooks (even when keyboards are detachable), • Distinguishing between them for the purposes of exclusion would be difficult, and • They represent an energy efficient alternative to standard Notebooks On the other hand, two other stakeholders commented that ultra-portable Notebook Computers should be excluded because their lack of an Ethernet connection signifies their frequent use disconnected from ac power. Two stakeholders commented that Slates and other portable/handheld computers generally use the same architecture so it is hard to distinguish between them. They should therefore both be excluded. A third stakeholder also noted the confusion but recommended only excluding Handheld Computers, Personal Digital Assistant Devices, and Smart Phones by combining the devices into one overarching exclusion based on how they are marketed. Lastly, one stakeholder agreed with applying battery charging requirements to Slates, while another commented that such requirements be separate from the computer specification.	EPA is currently reviewing the Slate and Tablet definitions, and plans on including revised definitions and requirements in a future update of the specification. Although EPA has excluded Slates from Draft 3, EPA intends to include them eventually, subject to Battery Charging System requirements. In the meantime, EPA welcomes further comments on this topic, such as whether using "solely a wireless connection" as a test to exclude products would be useful or what other characteristics could be useful in distinguishing products.

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Scope	Ultra Thin Clients	A stakeholder stated that there is no need to specifically define and exclude Ultra Thin Clients. Rather, they should be included and compared to other Thin Clients.	EPA does not have sufficient data on ultra-thin clients to make an informed judgment on how they should be included in the specification or how they should compete against other thin clients. The safest route is to exclude them for now and look for more information prior to or during the development of Version 7.0.
Scope	Battery Chargers	A stakeholder asked if EPA-approved labs for Computers will also need to be accredited for the Battery Charger specification requirements and noted that this would impose additional costs.	EPA understands this concern and will investigate the issue to avoid duplicative or additional testing costs that could arise.
Qualification Criteria	General Concerns	A stakeholder noted areas of concern in the specification which include resolution on the category system, the display adder equation, enhanced display multiplier, and data integrity.	EPA has reviewed all data with stakeholders prior to the publication of Draft 2 and has addressed these areas of concern in Draft 3. If concerns remain, EPA welcomes comments on them as part of the Draft 3 review process.
Categorization	Desktop/ Notebooks	<p>Two stakeholders commented that the current Notebook categorization, which groups together lower power/lower performance Notebooks with ordinary Notebooks, needs to be revised per the ITI proposal.</p> <p>If the ITI proposal is not accepted, then the two stakeholders requested the following clarification for the NB0 and NB1 categories:</p> <ol style="list-style-type: none"> 1. Combine NB0 and NB1 into one category and use it as a default for Notebooks that do not meet NB 2, 3, and 4. 2. Delete CPU Cores, Channels of Memory, and Screen Size from the definitions of the categories. <p>Similarly, grouping together Desktops with a lower-power Notebook architecture with standard ones, should not be done because these Desktops have different CPU performance and display components.</p> <p>However, another stakeholder pointed out that if Desktops and Integrated Desktops (which use Notebook architecture) were split into different categories then there would be less drive to increase the efficiency of standard Desktops.</p>	EPA thanks stakeholders for their comments on this topic and has proposed the use of the ECMA categorization for Desktops and the ITI categorization for Notebooks in Draft 3. This should eliminate concerns regarding lower performance of Desktops that use mobile components, while recognizing the most efficient Notebooks.
Qualification Criteria	Notebooks	<p>A stakeholder requested that Table 4 (the Categorization of Notebook computers) be clarified to help users determine which category (NB4, NB3, NB2, NB1, or NB0) applies to product by performing a series of simple tests, similar to Version 5.2.</p> <p>Another concern from this commenter was the upper limit on the screen size because a product could have a single core processor and a 14" screen. This product wouldn't be NB2 because of the 2 core requirement but it would be excluded from NB 1 as well.</p>	The categorization system for notebooks has changed to reflect the ITI-supplied proposal. EPA will work with stakeholders during the review process for Draft 3 to ensure that any concerns about product categorization are addressed.
Qualification Criteria	Display Adder	<p>A stakeholder commented that screen size should be considered in the power consumption calculation, while two others requested that the units of area be specified.</p> <p>A stakeholder also questioned using different adder calculations for Integrated Desktop and Notebook computers since they share the same LCDs.</p>	<p>EPA has retained the Integral Display adder, the allowance for which depends on screen area, and included units of measurement in Draft 3.</p> <p>EPA has retained different Integral Display adders for Notebooks and Integrated Desktops because the luminance is different. Using the same adder value for both would result in no qualifying Integrated Desktops.</p>
Qualification Criteria	TEC Adder	One stakeholder requested that kWh be the unit for the TEC Adder.	EPA has retained adders expressed in kWh in the Draft 3 specification.
Qualification Criteria	Graphics Adders	<p>One stakeholder commented that Notebook computers not receive Discrete Graphics adders due to the widespread use of Switchable Graphics. The stakeholder also noted that if the performance of GPUs for Notebooks and Desktops is the same, then the power consumption should also be the same; however, EPA assumes that Notebook GPUs use 38% of the energy of Desktop GPUs.</p> <p>A stakeholder requested separation between systems with Discrete and Integrated Graphics because Discrete systems may show lower TEC due to adders despite having greater real-life energy consumption.</p> <p>Lastly, another stakeholder requested that the GPU adders be reassessed with data from 2011 and 2012 and recommended that the Base TEC be increased to offset any decreases in GPU allowances to ensure the correct proportion of products quality.</p>	<p>Based on information from graphics card manufacturers, discussion with stakeholders, and EPA's internal analysis, Notebook GPUs consume approximately 50% the energy of Desktop GPUs. Therefore, EPA has maintained different GPU adders for Notebooks and Desktops in Draft 3.</p> <p>EPA has also revised the graphics adder allowances and base TEC levels to reflect 2012 systems, including ones with switchable graphics.</p> <p>Notebooks with switchable graphics will not receive discrete adders but will be subject to integrated graphics Base TEC levels. Note that a new category, NB I3, has been created to handle such systems.</p> <p>EPA has reassessed the GPU adders and Base TEC levels using 2011 and 2012 data and has revised the levels in Draft 3 accordingly.</p>
Qualification Criteria	Table 9 Clarification	A stakeholder requested that TEC_BASE in Table 9 be defined.	EPA has defined TEC_BASE in the equation that references the Base Allowance tables in Draft 3.

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Qualification Criteria	Power Supply Requirements General	One stakeholder commented that Version 5.0 requirements for power supplies are sufficient and recommended that voluntary incentives be used to encourage further efficiency, while another commented that power supply requirements may penalize systems that otherwise meet TEC requirements and noted that Europe, Japan, and China are moving away from the 80 Plus power supply mandate.	EPA recognizes that power supply requirements may have constrained ENERGY STAR market share in the consumer market in the past. As such, EPA has proposed a halt to more stringent power supply requirements for Version 6.0. Nonetheless, EPA maintains that large energy savings have been realized in the past via power supply efficiency requirements and proposes to build on that in Version 6.0 by including an optional power supply efficiency incentive in Draft 3. EPA may continue to increase power supply efficiency requirements in Version 7.0.
Qualification Criteria	Power Supply Incentive	One stakeholder commented that the NRDC-proposed power supply incentive was sound and would not pose an insurmountable barrier, while another commented that the costs and benefits of the incentive are unclear. More specifically, stakeholders commented on the 10% loading point, which must be tested to receive the incentive. One stakeholder commented that the additional 10% testing condition can pose a disadvantage to small businesses, while another noted that the QDI and Chetty data upon which the loading point was established do not align with the results of other major studies. A third stakeholder understood the historical reasons for different measuring methods but encouraged harmonization in the future.	EPA is proposing to adopt the optional power supply efficiency incentive from NRDC, requiring testing at 10% of full load. EPA and NRDC analyses indicate that savings will be realized with this incentive. Additionally, this incentive will maintain existing momentum toward making power supplies more efficient.
Qualification Criteria	Power Supply International Marking Protocol	One stakeholder noted that multi-output external power supplies are out of the scope of the International Efficiency Marking Protocol, so the marking requirements should only apply to single-output.	The requirements for multiple-voltage external power supplies have been revised in Draft 3 such that they no longer reference the International Efficiency Marking Protocol.
Qualification Criteria	Time to Sleep Mode	One stakeholder suggested reducing the 'Time to Sleep' from 30 to 15 minutes because computers wake up quickly.	EPA can investigate the viability of a 15 minute Sleep Mode for future specification revisions. Given the mode definitions in Draft 2, a 15 minute Sleep Mode requirement would eliminate the Long Idle State used for testing, necessitating a change in that definition as well. It would be best to look into such a change in future versions of the specification, keeping in mind not only hardware capabilities but the quality of user experience under a 15 minute Sleep Mode.
Qualification Criteria	Sleep Mode	Three stakeholder noted that some computers, in particular Tablets using smartphone architectures, do not have a distinct Sleep Mode. Specification language (especially in the table of Power Management requirements) should acknowledge this by replacing "Sleep Mode" with "Sleep mode or a state with a power consumption not exceeding 2 W" (as opposed to the 10 W threshold specified for Desktops elsewhere in the specification). It also may be beneficial to harmonize the Sleep limits with the ErP Ecodesign computer regulation.	By the definition in Draft 2, a Tablet computer can not use smart phone architecture. A Tablet computer must have a reversible touch screen, as well as an integrated fully functional keyboard. EPA is not aware of any current smartphone architecture that achieves both of these requirements. The 10 W level was developed after discussions with stakeholders about products without discrete sleep modes. EPA strongly encourages the submission of information to support a 2 W level or to support the existence of alternative low power modes that do not meet the definitions of Sleep or Off. EPA believes the current 10 W approach is a realistic bar for products now on the market.
Qualification Criteria	Power Management Requirements	One stakeholder suggested changing Table 2 (Power Management Requirements) to text, as most of the cells have the same content.	EPA has retained the full table in the Draft 3 specifications so as to focus stakeholder review on the substantive changes in the specification, but may condense these and other sections of the specification in a Final Draft.
Qualification Criteria	Adders	One stakeholder commented that EPA should assume an 80% power supply efficiency when calculating adder allowances because most desktop power supplies with output power greater than or equal to 300 W are at less than 20% load in Idle Mode, and tests at 10% load reveal efficiencies of 79%. Also, the stakeholder stated that their analysis showed that the Desktop Storage Allowance could be reduced from 26 kWh to 11 kWh based on the 25th percentile of performances seen in hard drives from two large manufacturers.	The Storage Allowance (and most allowances used in ENERGY STAR specifications) is not targeted specifically to a 25th percentile of performance. Instead, the overall system energy performance is targeted to allow for flexibility in meeting specification levels. This may lead to allowances that are beyond the 25th percentile, but overall system performance is still held to this standard.
Qualification Criteria	Active State Workstations	A stakeholder requested disclosure of Active state power consumption (Idle and Max) for Workstations and supported Typical Energy Consumption requirements for Workstation similar to the approach for Desktops and Notebooks.	EPA agrees and continues to push for an acceptable, industry-wide benchmark for workstation active mode power and energy consumption. Draft 3 includes additional benchmarking requirements, and EPA intends to engage with stakeholders between Versions 6 and 7 to develop a benchmark.

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Qualification Criteria	Thin Client Power Limits	<p>One stakeholder commented that Off and Idle Mode limits for Thin Clients are insufficient, while another questioned whether the Off Mode limits (0.5 W base power and 0.4 W Wake-on-LAN allowance) were based on Europe's EuP Directive 2005/32/EC. These requirements should not apply to Thin Clients as they are not used in a "domestic environment" which is the scope of the Directive.</p> <p>A third stakeholder supported an increase in the Off Mode requirements to 0.8 W base with 0.4 W WoL allowance. This stakeholder also commented that Thin Clients that do not support Sleep Mode not be allowed to qualify because doing so could be easily accomplished with a software update.</p>	EPA has moved to a TEC approach to Thin Clients in Draft 3.
Qualification Criteria	Thin Client Graphics Adders	One stakeholder commented that Thin Clients with Discrete Graphics need a separate category or an adder, while another stakeholder questioned those approaches as Discrete Graphics are not "necessary in a Thin Client that would be considered energy efficient".	EPA has added a reasonable Discrete Graphics allowance for Thin Clients in Draft 3.
Qualification Criteria	Future Considerations	A stakeholder recommended including Version 7.0 requirements in Version 6.0 based on anticipated technological developments.	Market transformations over the past several years have resulted in significant gains in energy efficiency, however they have also brought large changes in product design and functionality. EPA is concerned that any levels set for Version 7.0 now will not be reflective of the market in the future--largely due to evolutions in product functionality and design that cannot be foreseen very far in advance.
Qualification Process		<p>Two stakeholders requested that non-qualifying configurations should not be allowed within a product family since product families must be qualified based on the highest-energy configuration--in this case, the non-qualifying configurations.</p> <p>To prevent this, they requested that EPA disallow non-qualifying configurations. Alternatively, EPA should require that a list of the non-qualifying configurations be submitted to the certification body.</p>	<p>The requirement as stated in Section 4.3.2 of Draft 2 (updated to Section 4.2.3 in Draft 3 due to editing) is intended to cover cases where a given model may not qualify normally, but a small permutation of that model's design may allow qualification.</p> <p>Example 1: All model B1234 notebooks are able to qualify for ENERGY STAR, so no special naming is needed. Test the worst case model.</p> <p>Example 2: Model C1234-A, C1234-B, and C1234-C notebooks may qualify, but Model C1234-D cannot. Test the worst case (either A, B, or C). No special naming needed.</p> <p>Example 3: Model A1234-A and A1234-B cannot qualify unless they replace their HDD with a SSD. These models should be labeled differently to denote that they are a special permutation of the traditional model line. For example, A1234-A-ES and A1234-B-ES.</p> <p>Many manufacturers highlight specific permutations automatically on their websites via product builders, but this provision is intended as guidance to clarify which special configurations of an otherwise non-qualifying product are ENERGY STAR and which are not.</p>
Effective Date		<p>A stakeholder pointed out that in the absence of grandfathering, manufacturers need to have the ability to qualify products prior to the effective date to minimize disruptions to existing product shipments and new product rollouts.</p> <p>Another stakeholder requested that a "Grandfather Clause" be included especially for Thin Clients.</p>	<p>Manufacturers <u>may</u> choose to qualify products to the new specification as soon as it is finalized and published on date X, subject to CB and lab availability. Manufacturers <u>must</u> begin qualifying products to the new specification by the X+9 months effective date. Products qualified to the old specification may remain labeled until the X+9 months effective date of the new specification. Products may no longer be tested and qualified to the old specification starting at X+4.5 months.</p> <p>Grandfathering is not allowed because specifications change in more than just their efficiency requirements--categories, test methods, and calculations may also change. This is especially true in the current revision of the Computers specification.</p> <p>Manufacturers will have up to 9 months to transition to new requirements, beginning on the day the specification is published. Manufacturers may take anywhere from 1 day to 9 months to transition to the new specification, or they may take longer if desired--but products qualified to the old specification will no longer be labeled after X+9 months and manufacturers that take longer than this will not have any qualified products on the market for some period of time.</p>
General	Dataset	A stakeholder requested that future proposals be accompanied by supporting data shared with all stakeholders to ensure all parties have the opportunity to evaluate and comment on risks and benefits. They stated that this proposal will result in realistic outcomes and will increase public confidence in ENERGY STAR.	EPA has had discussion with some product stakeholders on working together to validate the accuracy of datasets prior to the development of Draft 1 in future specification revisions. EPA will consider this arrangement for future revisions of the computer specification as well and appreciates stakeholder efforts to raise concerns on this issue. Additionally, EPA's updated database system will enable some level of automated data validation.

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General	Mandatory Standards	Another stakeholder stated that their general area of concern was the use of ENERGY STAR requirements for Minimum Energy Performance Standards (MEPS) and requested a clause be introduced to discourage this practice.	EPA understands and shares industry concerns on the issue of voluntary ENERGY STAR levels being used in MEPS and will continue to work with other governments to ensure that appropriate efficiency levels are used in their programs. If stakeholder have concerns with any particular programs they should contact ENERGY STAR so that we can provide guidance.
Labeling of Slates		Two stakeholders expressed concern with the labeling requirements for slates because it is difficult to put labels on the top or front of a slate. One of these commenters requested that the label should be applied to the bottom of the product. The other stakeholder recommended that manufacturers be allowed to determine where to put a permanent or temporary label on the product. Electronic labeling also causes problems because the start-up time of slates is designed to be very short. The stakeholders proposed a minimum of 0.5 or 0.2 seconds for the amount of time that the ENERGY STAR mark should be required to be displayed via electronic labeling.	EPA is currently reviewing the Slate and Tablet definitions, and plans on including revised definitions and requirements---including labeling requirements---in a future update of the specification to Version 6.1.
Small-scale Servers		A stakeholder commented that the current Wake-on-Land adder allowance and Pidle_Max and Poff_Max limits for Small-scale Servers are insufficient and requested that EPA implement a TEC approach.	EPA believes the current small scale server approach provides ample flexibility when comparing the proposed requirements to the data in the dataset. EPA did explore using a TEC category approach for small scale servers, but lacks data to define appropriate mode weightings for this product category. EPA welcomes stakeholder feedback on mode weightings for small scale servers for consideration in future versions.
Verification		A stakeholder requested that ENERGY STAR suspend post-market surveillance when a new version is published and resume after the new effective date because: <ul style="list-style-type: none"> • New models must be re-tested to the new specification • Requiring new models to be tested with the older version would be costly and meaningless if they are subsequently qualified under the new version • Manufacturers/test labs will be changing their internal validation tools to prepare for the new version and will not be able to test under the old version. 	The possibility of halting verification testing in a given product category due to an impending specification revision is at EPA's discretion. EPA will act on a case-by-case basis to determine when this is necessary.
Workstations		One stakeholder requested that there be validation of the SPECWorkstation benchmark approach for active mode data before there is an agreement on data collection.	EPA and DOE have revised their approach to workstation testing in Draft 3 and welcome stakeholder comments on the new approach, plus any additional stakeholder proposals.
Test Method		A stakeholder recommended that a device be tested as shipped for power management settings and dimming. Also, in order to ensure proper conduct for GPU testing, they requested the following language be used to clarify: "(H) Where discrete GPUs are included in the computer, they will be tested with the GPU both enabled and disabled and both values will be reported." Another stakeholder expressed concern with the dark room requirements and test procedure conflicts.	EPA has handled this situation by requiring Switchable Graphics systems to test with only Integrated Graphics enabled. Systems without switchable graphics must use their discrete cards for testing. Adders have been provided in Draft 3 for Desktops and Integrated Desktops with Switchable Graphics to encourage the use of this energy saving technique.
HDMI Connections		One stakeholder noted that computer monitors connected via HDMI do not power down when the computer goes to sleep and requested that EPA require computers to power down monitors connected via HDMI.	Some consumer electronic products offer the HDMI Consumer Electronics Control (CEC) interface that permits control of one device by others connected to it. However, due to a lack of industry consensus and differences in implementation, EPA will not require HDMI CEC for all products implementing HDMI. EPA recognizes the power saving opportunities associated with CEC and thus encourages manufacturers to implement it in their products.